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LANDSCAPE MANAGEMENT

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AS I SEE IT...

You know who you are

This month's issue carries a story about the progress being made by landscape architects and contractors in their daily working relationships.

Have you, Mr. Contractor, ever changed an architect's plans without first consulting with him? Do you believe the architect has a right to see his plans carried out as drawn?

Do you, Mr. Architect, draw your designs after considering the total adaptability of the plan to the job site? Do you believe a contractor deserves to work from plans that are practical?

The green industry's best contractors and architects communicate, respect each other's talents and depend on each other for guidance. They figured out long ago that summers are short, and once you step between the lines, it's time to play ball.

A contractor interviewed for the story on page 47 admitted that some contractors will, for example, use a substitute irrigation product without telling the architect or developer. "Once it's underground," he said, "who's going to know?"

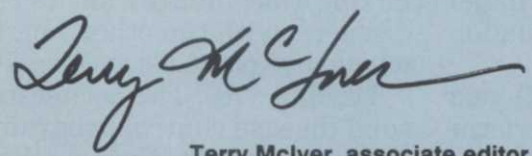
That kind of behavior might go over in high school homeroom, but not in the real world. Sure, no one but the contractor will know of the switch. But if a contractor conducts all his business that way, his days in business are numbered. At best, he'll creep along and make a minimal living.

Every profession has good and bad practitioners. Many great contractors and architects do their best for themselves and the green industry. But some fly-by-night, seat-of-the-pants operators eek out a living by playing fast and loose with professional ethics. They drive trucks that are ready for the boneyard, they don't bathe and they wear the same T-shirt for a month. The true professionals in both fields are constantly looking for ways to improve.

The industry has made great strides in the past decade. But the responsibilities remain, and they extend in many directions.

Architects: draw with practicality; take charge of the project; visit the site regularly; be open to modification. Contractors: accept the architects' knowledge; he needs you as much as you need him; communicate; don't cut corners. Developers: be aware of what is going on at all times, and know that the architect is the project leader. If a contractor makes a suggestion, talk to the architect before giving your okay.

The only side we're taking is that of professionalism and productivity. The industry has enough to deal with as it is, thanks to the anti-everything crowd. Let's continue to work together.



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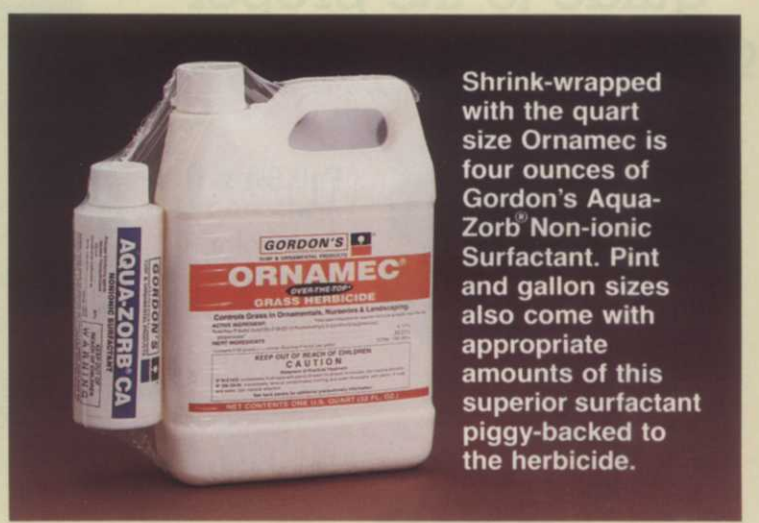

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Acacia, Shoe-string
Acacia, Willow
Acacia, Willow-leafed
Admiral
African sumar standard
Ageratum
Almond, Flowering
Aloe, Barbados
Aloe vera
Aloe zanzibarica
Althea
Alyssum
Amur River
Annual statice
Anthony Waterer
Ash, Arizona
Asparagus, Myres
Asparagus, Sprenger
Aucuba
Aucuba japonica variegata
Aurea
Australian bush cherry
Bamboo, Golden
Banana, Ethiopia
Banksia
Barberry, Mentor
Bearberry, Red
Bellflower
Berkman's
Bird of paradise (Caesalpinia gilliesii)
Bird of paradise (Strelitzia reginae)
Bird of paradise, Giant
Bittle brush
Black Hills
Blue Point
Blue star creeper
Bottle-brush
Boxwood, Common
Boxwood, Japanese
Boxwood, Korean
Brown beam
Buckthorn, Tallhedge
Buffalo
Cactus, Barrel
Cactus, Cholla
Cactus, Hedgehog
Cactus, Saguaro
Caesalpinia cacalaco
Camellia
Camellia, Sasanqua
Candelabra plant
Candytuff
Cane plumbago
Cape weed
Caricature plant
Carissa tuttlei
Carob tree
Cassia sturdii
Cassia, African
Cassia, Feathery
Century plant
Cedar, Red
Cherry, Brush

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PICTORIAL QUIZ . . . for landscapers and nurserymen: How are you going to get the unsightly, nutrient-robbing grasses out of the problem areas shown on this page? The answer is to spray over the top with Ornamec. It makes landscaping handiwork and nursery husbandry look good.

Cherry, Carolina
Chives
Christmas tree, New Zealand
Cleyera (Cleyera spp.)
Cleyera (Ternstremia sp.)
Coffee
Coleus
Cologreen
Compact burningbush
Coral beauty
Coreopsis, Threadleaf
Coronation Gold
Cotoneaster
Cotoneaster apiculata
Cotoneaster microphyllus
Cotoneaster, Spreading
Cotoneaster, Willowleaf
Crabapple, Showy
Cranesbill
Creeping Charlie
Crossandra
Croton
Crown Vetch
Cypress, Allum lawson
Cypress, Cripps hinoki false
Cypress, Italian
Dagger, Spanish
Dagger, Weeping
Daisy, Shasta
Daisy, White African
Daylily
Densata
Deutzia, Slender
Dogwood, Cornelian cherry
Dogwood, Flowering
Dogwood, Red twig
Dumbcane, Giant
Dusty miller
Ellen Danica
Emerald mound
Eranthemum, Purple false
Escallonia fradessii
Escallonia rubra
Euonymus fortunei
Euonymus, Spreading
Euryops pectinatus
Evergreen, Fransher
Evergreen, Painted
Evergreen, Silver Queen
Evergreen, Treubii Ribbon
Fastadiata
Fatshedera
Fern tree, Desert
Fern, Sword
Fig, Creeping
Fig, Exotica weeping
Firecracker
Firethorn, Mojave
Firethorn, Variegated
Firewheel tree
Fir, Concolor
Fir, Douglas
Fir, Noble
Flaviramea
Forsythia intermedia
Forsythia sp.
Forsythia x intermedia
Forsythia, Weeping
Froebelii
Gardenia, dwarf
Gardenia, Tahitian
Gay-feather
Gazania gold rush
Gazania uniflora leucoleana
Geranium
Geranium, Ivy
Gimlet, Narrow-leaf
Gladiolus x hortulanus
  var.:
    Debbie
    Jennie
    Mahogany
    Stargazer
Gold drop (Potentilla f.)
Gold drop (Physocarpus f.)
Gold flame
Gold tip
Grapefruit
Green palo verde
Green stone crop
Gum, American sweet
Gum, Desert
Gum, Red
Gum, Red box
Gum-barked coolibah
Hahaii
Hawthorn, Indian
Heather, Scotch
Hemlock, Eastern
Hen and chickens
Hesperaloe parviflora
Hetzi
Hibiscus, Chinese
Hollyhock
Hollywood
Holly, American
Holly, Dwarf Buford
Holly, Fosteri
Holly, Japanese
Holly, Meserve
Honey Locust/Shade master
Honeysuckle, Bush
Honeysuckle, Cape
Honeysuckle, Morrow
Hopseed bush, Purple
Hosta, Variegated
Hydrangea, Oakleaf
Hydrangea, Panicle
Ice plant, Purple trailing
Ice plant, Red spike
Ice plant, Rose
Inkberry, Compact
Iris sp.
Ironwood
Ivy, Algerian
Ivy, English
Ivy, Grape
Ivy, Hahn's
Ixora
Jacaranda
Jackmanni
Jacobinia ghiesbreghtiana
Japanese snowball
Jasmine, Asiatic
Jasmine, Star
Jessamine, Carolina
Jojoba
Judd
Juniperus procumbens
Juniper, Blue vase
Juniper, Gold coast
Juniper, Nicks compact
Juniper, Sargent
Juniper, Shore
Keteleeri
Lalandei
Lantana, bush
Lantana, Purple trailing
Laurel, Indian (F. microcarpa nitda)
Laurel, Indian (F. nitda)
Lavender cotton
Leptospermum laevigatum
Ligustrum, Wax
Lilac, James McFarlane
Lilac, Korean
Lily of the Nile, Peter Pan
Lily, Kaffir
Lily-of-the-valley bush
Liriope
Liriope, Green
Liriope, Variegated
Magnolia, Star
Mahonia
Manila Ripple
Maple, Japanese
Maple, Norway
Maple, Silver
Marigold (Tagetes sp.)
Marigold (Calendula sp.)
Mesquite, Chilean
Metallic plant
Mexican indigo
Mirror plant
Mirror plant, Variegated
Moneywort
Moon Glow
Morning-glory, Bush
Mother-in-law's tongue
Myoponum, Prostrate
Myrtle
Myrtle, Crepe
Myrtle, Wax
Nanum
Newport red
Ninebark, Dwarf 'Nanus'
Oak, live
Oak, Silk
Ocotillo
Odocanthus sp.
Oleander tree, Yellow
Oleander, Petite
Oleander, Pink
Oleander, Variegated
Olive tree
Olive, Russian
Ongerops, Acacia
Orange, Sour
Oregon grapeholly
Osmanthus, tea olive
O'Conners legume
Pachysandra, Japanese
Pagoda flower
Palibin
Palm, Canary Island date
Palm, Chinese fan
Palm, Golden fruited
Palm, Mediterranean fan
Palm, Mexican fan
Palm, Pygmy date
Palm, Queen (Acrecastrum r.)
Palm, Queen (Cocos p.)
Palm, Sago
Palm, Windmill
Parsley panax
Parsoni
Passion vine
Pear, Bradford
Pepin
Pepper, Brazilean
Pepper, California
Periwinkle
Periwinkle, Dwarf
Philodendron selloum
Philodendron, "Micans" velvetleaf
Photinia
Pine, African fern
Pine, Austrian
Pine, Black
Pine, Canary Island
Pine, Dwarf Swiss mountain
Pine, Eastern white
Pine, Mexican border
Pine, Norfolk Island
Pine, Ponderosa
Pine, Red
Pine, Scotch
Pine, Western
Pink clover
Pink lady
Pink weigelia
Pittosporum, Desert willow
Pittosporum, Wheelers dwarf variegated
Plumosa (Juniperus h.)
Plumosa (Chamaecyparis p.)
Plum, Natal
Polystichum capense
Primrose beauty
Privet, California
Privet, Texas
Pygmy, Crimson
Pyracantha graberi
Pyracantha, Lodense
Radiator plant
Raspberry ice
Red bud
Red fountain grass
Rheulia californica
Rhododendron "Gable Hybrid" var.:
    Elizabeth Gable
    Purple splendor
    Rose greely
Rhododendron catawbiense var.:
    Chionoides rhododendron
    English roseum
    Lees dark purple
    Purple elegans
    Roseum elegans
    Roseum superbum
    White catawba
Rhododendron formosa
Rhododendron obtusum var.:
    Amoenum
    Coral bells
Rhododendron spp. var.:
    Blaauw's pink
    Boule de neige
    Delaware Valley white
    Fashion
    Gibralter
    Girard's rose
    Gloria
    Greeting
    Gumpo pink
    Gumpo white
    Hahm red
    Herbert
    Hino red
    H. H. Hume
    Kaempo
    Kluis sensation
    Masasoit
    Mother's Day
    Pericat
    Pink pearl
    President Lincoln
    Prize
    Purple Gem
    Red ruffle
    Red wing
    Road runner
    Rosebud
    Royalty
    Rutherfordiana Constance
    Salmon spray
    Snow
    Stewartstonian
    Sweetheart
    Tabor
    Tradition
    White cascade
Rhododendron yedoense
    Korean azalea
    Poukhanense
Rock rose
Rose
Rose, Tea hybrid
Rosemary dwarf
Royal beauty
Rubber tree
Sage, Texas
Saltbrush
Salvia greggii
San Jose
Sandwort
Scarlet firethorn
Sedum
Sedum x rubrotinctum
Siebold
Silver King
Skandia
Snow in summer
Spider flower
Spirea, Billiard
Spirea, Crispa
Spirea, False
Spirea, Snowmound
Sprengeri
Spruce, Black Hills
Spruce, Blue
Spruce, Dwarf Alberta
Spruce, Norway
Spruce, Serbian
Strawberry, Ornamental
Swamp immortella
Sweet William
Thuja occidentalis var.:
    Emerald green
    Globosa
    Pyramidalis
    Techny
    Techny American arborvitae
    White cedar
    Woodwardii
Ti
Tomentosum
Torulosa
Viburnum (V. japonicum)
Viburnum (V. x rhytidophylloides)
Viburnum, Doublefile
Viburnum, Sandankwa
Viburnum, Compact cranberrybush
Viburnum/willowwood
Vicari
Waffle plant
Wandering Sally
Welleri
Willow, Australia
Willow, Tortuosa corkscrew
Willow, Weeping
Witchita blue
Xylosma senticosa
Yarrow, Common
Yarrow, Fernleaf
Yaupon, Dwarf
Yaupon, Tall
Yedda
Yellow bells
Yew pine
Yew, Dense
Yew, Hicks
Yew, Japanese
Yew, Thayeri
Yucca
Zinnia sp.

GREEN INDUSTRY NEWS

JULY 1989, VOLUME 28, NUMBER 7

LANDSCAPE MANAGEMENT

LEGISLATION

New lawn council meets with EPA representatives

WASHINGTON, D.C. — Better communication between the Environmental Protection Agency (EPA) and the lawn care industry was a chief topic discussed during a recent meeting in the nation's capital.

The meeting between PLCAA's newly-formed Council for Lawn Care Information and EPA officials was especially timely in light of recent activism against and legislation regulating the use of pest control chemicals in many states.

Those present at the meeting included Jim Wilkinson, PLCAA's director of environmental and regulatory affairs; Bob Earley, publisher of *Lawn Care Industry* magazine; and various LCOs, university experts, manufacturers, formulators and distributors.

The meeting included a discussion about whether or not LCOs would be included in agricultural worker protection standards currently being promulgated. The lawn care industry would like input on these standards, and would like to see distinctions made between mixers, loaders and applicators.

Depending on the toxicity of particular pesticides, there might someday be three levels of certification required. Some products would be applied only by certified applicators, others would require an on-site supervisor and others would require a supervisor be available within a reasonable time of application. □

MORE LEGISLATION

PLCAA challenges new local ordinance in Mayfield, Ohio

COLUMBUS, Ohio — The Professional Lawn Care Association of America (PLCAA) has filed in the U.S. District Court of Ohio challenging a local ordinance on constitutional grounds.

The village of Mayfield had passed an ordinance requiring lawn chemical users to notify abutting neighbors when they planned to spray lawns and to tell them the type of chemicals being used.

"The industry is not opposed to reasonable, sound regulation, and we're not opposed to further regulation in the state of Ohio," says PLCAA's Jim Wilkinson. "However, there are some 88,000 local governments in the United States, and if each of those governments decided they wanted to regulate the lawn care industry, it would create absolute chaos."

The PLCAA is asking that Mayfield be permanently restricted from enforcing the ordinance and that it be prohibited from passing similar ordinances.

The association believes that the Federal Insecticide, Fungicide and Rodenticide Act established that only states or the federal government could regulate pesticide use. "Mayfield Village," reads the suit, "by purporting to regulate pesticide use, violates the Supremacy Clause of the U.S. Constitution."

Sign-posting regulations took affect across Ohio on June 1. They prohibit lawn service companies from applying pesticides to residential lawns in any municipality or subdivided area of a township without meeting certain requirements.

Requirements include written notification to the property owner listing the pesticides applied and other information.

Companies are also required to make a reasonable attempt to notify residents of adjacent property prior to an application, providing the neighbor has asked the company in writing to provide such notification.

Such proposed legislation is not unprecedented. In 1984, the city of Wauconda, Ill. unsuccessfully tried to pass the same type of laws that would, in effect, pre-empt the FIFRA laws. □

TREES

'Waggle' damage examined in U.K.

LONDON, England — Scientists here are seeking ways to minimize tree damage caused by high winds.

Wind damage results in the loss of hundreds of thousands of trees each year in the United Kingdom, representing approximately 13,000 forest acres.

Dr. Ronnie Milne has been leading a research team at the U.K. Natural Environment Research Council's Institute of Terrestrial Ecology that could have applications in the U.S.

Milne reports that 40 mile per hour winds combining with the trees' natural swaying motion results in extreme movement, or "waggle."

Milne and his associates are constructing mathematical models of how trees bend in the wind in order to find ways to reduce the losses due to wind damage. According to Milne, site selection, soil depth, spacing and drainage all affect the trees' wind survivability. □

TECHNOLOGY

Companies search for alternatives to synthesized chemical pesticides

RALEIGH, N.C. — America is currently in a state of "chemophobia," says R.L. Brandenburg, extension entomologist at North Carolina State University. Companies are responding by searching for alternatives to synthesized chemical pesticides, he further notes.

"Over the next five years or so it will become more and more important to find alternative approaches," he says. "The public is demanding it, even though they're demanding nicer lawns, nicer shrubs and nicer landscapes at the same time."

The public often receives information that is presented to it in a very emotional fashion, argues Brandenburg. "Sometimes emotion will overrule factual information and, as a result, we need to be looking at some of these other areas and make them available to the public."

The most obvious alternative, yet often overlooked, is to maintain vigorous, healthy turf, says Brandenburg. "Many insects like thin turf because it's easier for them to dig into the soil, lay their eggs and move through and feed on the grass."

Reducing thatch is also important, he adds, because "insects and thatch go together. The thatch provides a protective barrier for them by binding pesticides, preventing them from reaching the insect."

Biologicals currently being used successfully include milky spore and parasitic nematodes for controlling white beetle grubs. "Improved techniques to produce milky spore have been developed and should improve its effectiveness over a wider range of temperatures and species," he says.

Parasitic nematodes have been around for years, but they remain an expensive alternative. "The one that I'm aware of that is available for turf would cost about $800 an acre. But in a few years, as the technology is improved, these may be produced much more cheaply."

Other biologicals to keep an eye on, according to Branbenburg, include various forms of diatomaceous earth and crustacean shell products, many of which remain untested under controlled situations, but are currently in the marketplace. These products destroy insect eggs. □

FERTILIZATION

It's almost time!

FORT COLLINS, Col. — Fertilization between August and December will improve heat and drought tolerance of turfgrass and result in less mowing, according to researchers at Colorado State University.

Studies by Drs. Tony Koski, cooperative extension horticulturalist, and Ohio State turf specialist John Street showed late season applications of nitrogen enhance fall and winter color of perennial ryegrass and tall fescue. The studies also determined that

continued on page 14

Dr. John Street

SHORT CUTS

BIG NUMBERS... Roundup herbicide should enter the elite ranks of $1 billion products, according to an analysis by Prudential-Bache Securities. The firm predicts worldwide sales of Monsanto's popular broad spectrum herbicide to exceed that mark sometime in 1989.

THE DEADLINE...for entering the 20th Annual Associated Landscape Contractors of America's Environmental Improvement Awards Program is Sept. 1. Entry forms can be obtained by calling ALCA at (703) 241-4004.

'PLACEBOUND STUDENTS'... The Institute of Food and Agricultural Sciences (IFAS) has a new program for non-traditional students who cannot leave work or family to attend school. The innovative program is for students who pursue a degree in ornamental horticulture and the most recent graduate is **Hilberto Gilbey**, manager of Ram Plant Growers in Fort Lauderdale. "The program helps industry employees who also want to continue their education and training," says **Dr. Stephen Verkade**, program coordinator. A full, four-year offering of courses is expected by next year.

OLD FRIENDS NEVER DIE... An old friend, **J. Mark Nuzum**, has joined Western Branch Holding Company Nitrex as vice president of specialty products. Nuzum, who has been in the green industy since his days at Turf Wiz and Tidewater Agricorp, is formerly a manager with the Turf Division of Lebanon Chemical Co.

COOLING SPRINGS... According to a recent article in *Golf Digest*, golf course construction in Palm Springs, Calif., may be one of the reasons the area's temperatures have droppped since the early 1970s. **Dr. Robert Balling** of Arizona State University says that solar energy is absorbed by concrete and asphalt in urban areas while golf courses and other parklands have an opposite, cooling effect. Palm Springs temperatures have dropped about two or three degrees in the last 15 years.

POURING IT ON... Despite new efforts by the green industry to decrease pesticide use through IPM programs and bio-controls, overall U.S. pesticide demand will grow four percent yearly through 1992. According to an independent report by **John Clifford** of The Freedonia Group, Cleveland, Ohio, pesticide sales will reach $5.4 billion by 1992. "Biological control measures cannot match pesticides' effectiveness and thus will not displace their dominant role," a press release notes.

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FALL FERT *from page 11*

Dr. Tony Koski

these grasses green up in spring without additional fertilization.

Less mowing is required because late season fertilization avoids a burst of spring growth and the resultant need to mow, they said.

Koski and Street also found that urea and Lawn Restore, both organic fertilizers, provide the best late fall/early winter turf color when applied at a 1 lb. of N per 1,000 sq. ft. rate. in late September to late October.

The best early spring color was seen with IBDU and Scotts 41-0-0 applied at the same time and rates as urea and Lawn Restore.

More information on late season fertilization in "Research Update" next month.—ED. □

REFERENCE

News bulletin for busy managers

CINCINNATI — A monthly newsletter for property managers is now also available to landscapers and chemical lawn care companies.

Landscape and Grounds Care Bulletin is meant to foster appreciation for commercial landscape work, increase sales through education and to give busy managers a way to stay in touch with clients.

Future bulletins will include information on chemical trimming and vegetation control, and weed control.

For more information, contact Focal Point Communications at (800) 525-6999. □

PRODUCTS

New technology in fertilizers has one application per year

MILPITAS, Calif. — Sierra Chemical Co. has released to the turf industry a revolutionary new fertilizer. Called Customblen, these resin-coated controlled-release fertilizers are based upon Sierra's Osmocote technology. They release nutrients to the turf plant for up to one year with one application.

The product has been used in the nursery market for the last 20 years, but is new to turf.

"Sierra has recently developed a line of products for both turf and ornamental use in landscape, lawn care and golf course applications," claims marketing manager Mark Broxon. "University turfgrass researchers are testing controlled release fertilizer (CRF) products this year. Response from distributors, landscape managers and superintendents to these materials so far has been excellent."

The resin coating releases the nutrients in a different manner than slow-release materials like sulfur-coated urea. Osmocote's nutrient release is strictly dependent on temperature. "When the temperature is higher, the plant needs more nutrients—but not enough to burn it. These products release nutrients in accordance with turf and plant growth needs," says Broxon.

Two longevities (5- to 6-month and 8- to 9-month) are available and under trial. The 8- to 9-month release formula would be used for the majority of the country, including most Midwest, lower East Coast and West Coast areas. The 5- to 6-month formulation would be used in northern climates like the upper Midwest, North and New England. For Sunbelt areas, two applications of the 8- to 9-month release products are recommended.

Turfgrass analyses available are 34-0-7; 24-6-10; 0-0-46; and 25-0-18. A 15-12-13 flower and ornamental fertilizer is available in 5- to 6-month longevity only.

"These products are expensive to make and use, but a single application is the selling point," Broxon concludes.

For more information, write Sierra at 1001 Yosemite Dr., Milpitas, CA 95035; or phone (800) 492-8255. □

XERISCAPE

New garden illustrates conservation and beauty

MESA, Ariz. — To demonstrate the water conservation properties and beauty of xeriscaping, a one-acre xeriscape garden was recently opened for public viewing here.

The result of a joint venture between Mesa Community College, Salt River Project and the city of Mesa, the garden provides examples of new design possibilities, and ways to replace or modify existing landscapes to make them more water efficient.

"This was definitely a community project," says Paul Freestone, water conservation specialist for the city of Mesa. "We started the garden with $25,000 in cash and ended up with a landscape project worth approximately $150,000." Thirty-nine landscape and irrigation companies donated time and material to the garden, and local citizens donated their time to complete the project. Extra help was provided by the University of Arizona Extension Service and Arizona State University's Graphic Arts Department.

Ron Dinchak, Mesa Community College life science instructor (kneeling), explains planting techniques to his students.

The garden features 150 varieties of shrubs and ground covers, 60 varieties of trees and three types of turfgrasses. All are zoned in accordance with their water needs and sun exposure. Signs posted throughout the garden identify the various plants and explain the principles of xeriscaping. □

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Circle No. 148 on Reader Inquiry Card

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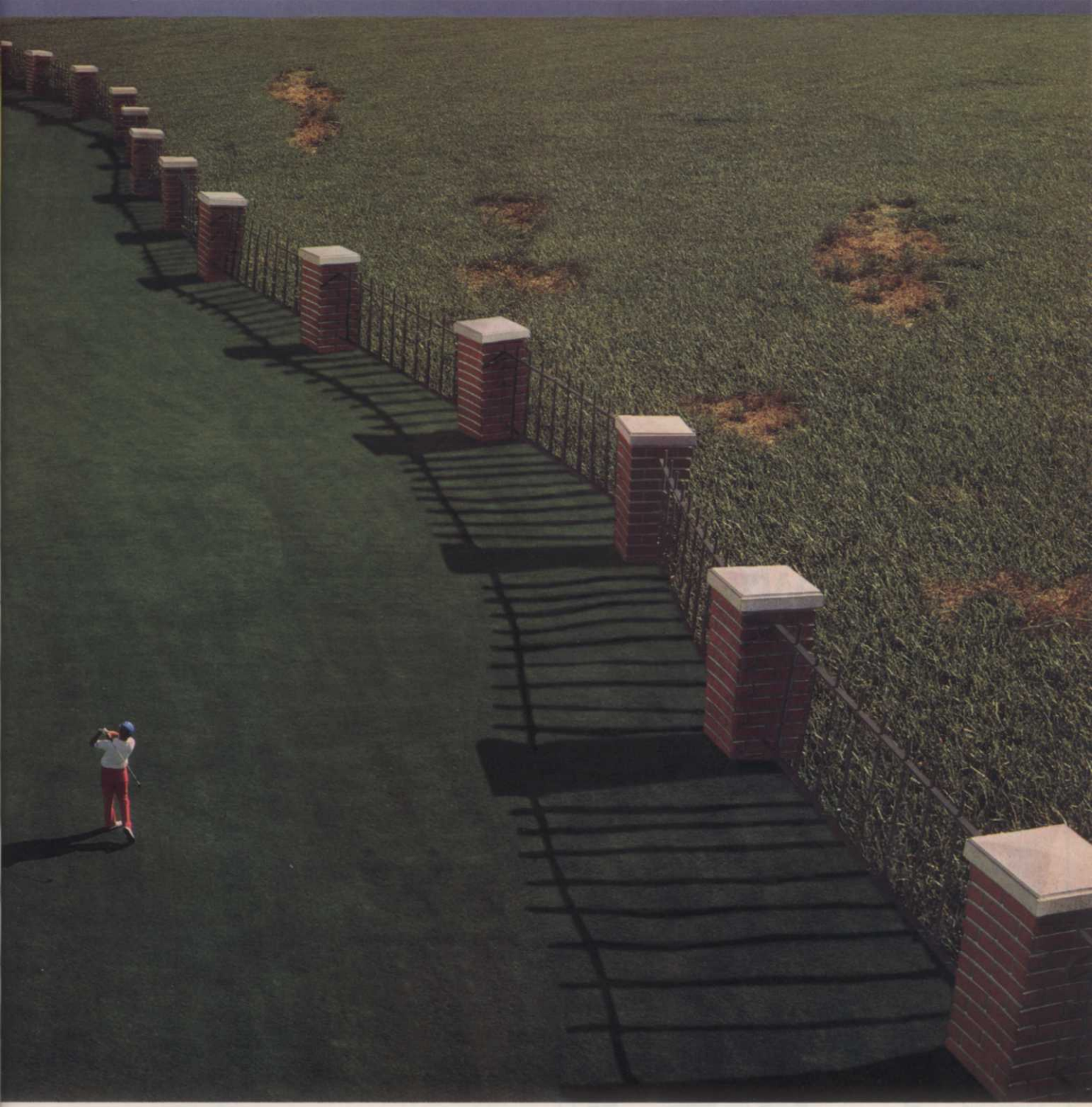

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Date palms in their native Indio, Calif. location before their replanting in Phoenix by Valley Crest Landscape.

LANDSCAPING

Trees plant temporary roots

PHOENIX, Ariz. — Hundreds of date palm trees have been planted in the middle of downtown Phoenix prior to their eventual relocation to an area landscaping project.

Valley Crest Landscape, a subsidiary of Environmental Industries, Inc., is responsible for the urban forest. The company is completing Arizona Center, a $515 million office/retail project on 18.5 acres. Rouse-Phoenix Development Corp. is building the center.

More than 900 trees were planted at the urban resting place. The mature specimen trees are at least 15 years old, and range in height from 20 to 42 feet.

Valley Crest purchased an entire date grove in Indio, Calif., and shipped them 250 miles to Phoenix.

The relocation is expected to last into 1990. □

ORNAMENTALS

'Common sense' helps control insect problems

RALEIGH, N.C. — The best method of insect control on ornamentals is often common sense, says J.R. Baker, Ph.D., an extension entomologist at North Carolina State University.

Dr. J.R. Baker

"If you're fortunate enough to choose which plants are to go into a landscape, select varieties that don't have a lot of insect and mite problems," suggests Baker. A visit to a nearby, healthy landscape will reveal which varieties are thriving and which aren't.

Another seemingly obvious step is to select plants that are healthy to start with. For example, look for cankers on the stem of dogwoods, which attract dogwood borers. If box elders are being considered, use males. Females produce seeds, which attract box elder bugs.

"Also, if you're setting out shade trees, make sure you have a way to irrigate them for the first couple years," says Baker. "Once a tree starts to wilt just a little bit, it will be susceptible to flat-headed wood borers, round-headed wood borers, ambrosia beetle, bark beetle—any type of insect that is attracted to trees under stress." □

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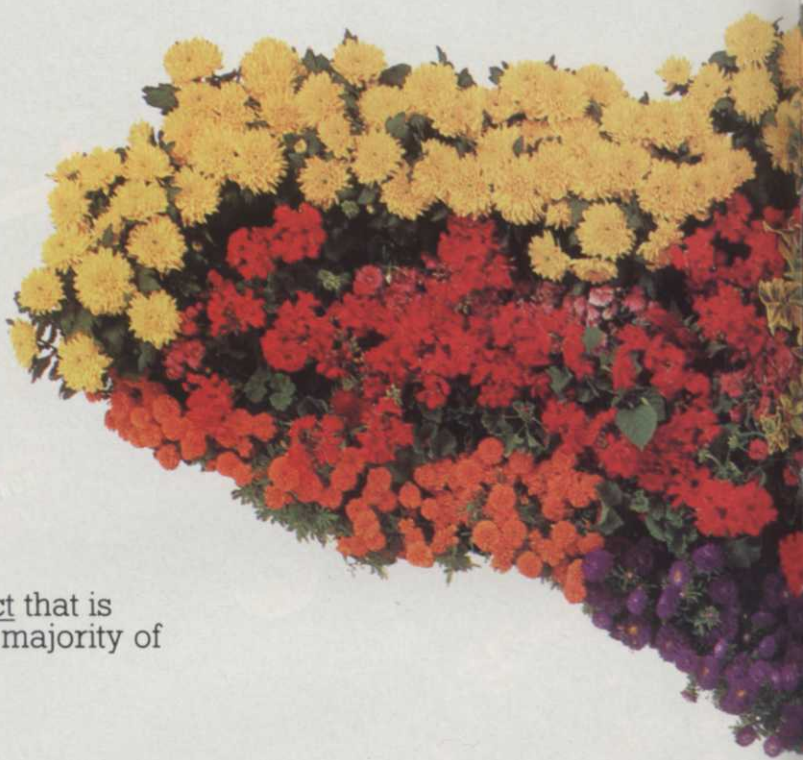

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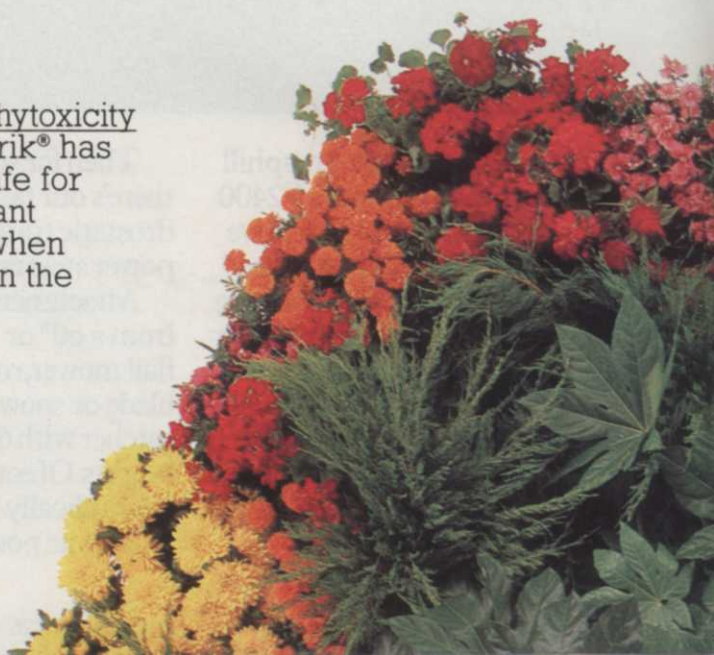

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Circle No. 146 on Reader Inquiry Card

INDUSTRY

Sandoz pops Nader for wrongful report

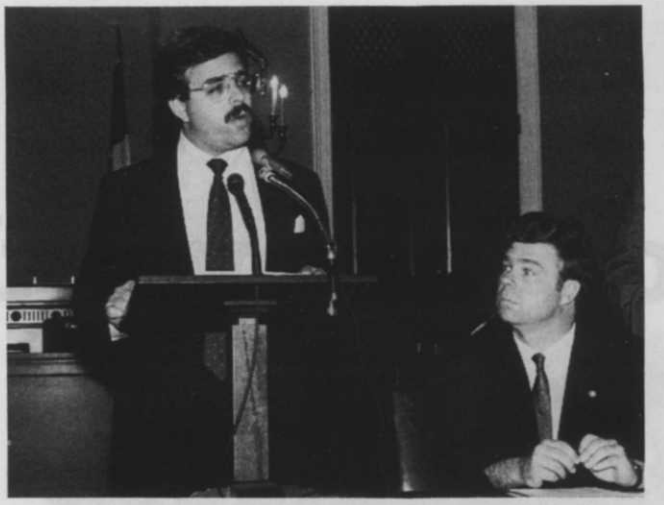
DES PLAINES, Ill. — John A. Licata, director of environmental, health, safety and quality assurance for Sandoz Crop Protection Corp., took no time to fire off a poignant response to a recent anti-pesticide report.

The highly-publicized report was issued by Ralph Nader's Public Citizen's Congress Watch on the lawn care industry. Licata's letter to the author of the report points out inaccuracies in the group's criticism of the herbicide Banvel and, along the way, gives us a good model to follow when undue critism rears its ugly head.

Licata writes that Banvel is *not* restricted in California and that "there is no substantiation that dicamba, the active ingredient in Banvel, is associated with an increased chance of miscarriage." He points out that fetotoxicity was slightly increased in rabbit studies—which is not unusual—and that the study's author considered it insignificant when making the report.

Also, concerning remarks that the product is a threat to groundwater, Licata says that "...because of its rapid degradation and the soil absorption of the degradation products, dicamba is not normally detected in surface or groundwater. It has not been detected at levels above the EPA's health advisory level."

Besides Banvel, Sandoz also produces Bonzi growth regulator, Mavrik Aquaflow and Pentac for the lawn and landscape markets. □



A.A.N. director of governement relations Ben Bolusky (at podium) offers the association's support of "oasis legislation" in Washington, D.C. At right is Indiana Congressman Jim Jontz, who introduced the act.

NURSERIES

Nurserymen like oasis ideas

WASHINGTON, D.C. — The American Association of Nurserymen (AAN) has come out in favor of the Urban and Community Forestry Act of 1989.

The bill has become known as "oasis legislation" because it supports the practice of tree planting to help cool urban areas.

Ben Bolusky, A.A.N. director of government af-

continued on page 26

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Circle No. 137 on Reader Inquiry Card

There's a new name in the winner's circle at Doral

Taming the famed Blue Monster course is the only way a golfer gets into the winner's circle at Doral. It's no different for turf professionals. Steve Kuhn, superintendent for all five of Doral's courses, occupies a permanent spot. John Deere, a new name at this prestigious Florida resort, just moved in.

"I've used John Deere tractors before so I know something about their quality," says Kuhn. "Most of us in this business knew that when John Deere got into more specialized turf care machines they would come out with something good.

"I bought a John Deere 280S Aerator on the spot—which is unusual for me. Since then, we've saved time and money using it to aerate all five of our courses. We can finish a course in 10-12 hours now where it used to take us 3-4 days.

"We also use a 151 Vacuum to pick up clippings and debris around the hotel. I like the fact that it has its own engine, so we can pull it with any of our vehicles. It also has a filtering system that makes it less disturbing for our operators and guests."

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A.A.N. *from page 22*

fairs, said the bill was "strong, immediate action that communities can take to green up and cool off our cities, and a sound approach to restoring the health of our urban environments."

The bill, introduced by Congressman Jim Jontz (D-Ind.), will serve to complement the Global Releaf Program, a campaign to plant 100 million trees in American cities and towns by 1992.

The bill will promote tree planting in urban areas and increase research and educational efforts to improve the public's understanding of tree and forest ecology in urban areas. It also will provide for increased technical assistance and a competitive grants program to support urban and community forestry projects.

With A.A.N.'s backing, a large number of trees are expected to be acquired from private nurseries.

The association will also provide private nursery advice to the National Urban and Community Forestry Advisory Council. □

AWARDS

NRVMA calls for 1989 nominations

CENTERVILLE, Del. — The National Roadside Vegetation Management Association has issued a call for entries in its 1989 *Excellence in Roadside Vegetation Management* awards program. The deadline for entries is July 15.

Established in 1985, the awards program recognizes the achievements of professionals who are responsible for vegetation management along the nation's roads and highways. Profiles of some of last year's winners appear in this issue of LANDSCAPE MANAGEMENT.

The competition is open to all individuals or organizations involved in roadside vegetation management. Entries may be submitted in one of two categories: roadside industry (state depts. of transportation and county or city road depts.) and roadside support (academic or industry contributions). Individuals may nominate their own operation or submit nominations on behalf of colleagues or business associates.

For additional entry details and a nomination form, write: NRVMA Awards Program, c/o McCullough & Assoc., P.O. Box 24, Eureka, IL 61530, or call (217) 356-9507. □

EQUIPMENT

OPEI: Consumer mag went too far

ALEXANDRIA, Va. — The Outdoor Power Equipment Institute is not happy with *Consumer Reports* magazine's recent survey of lawn tractors.

"They went too far," says John Liskey, OPEI's director of statistical and technical services.

"They got a little bit of information and they just carried it to extremes."

The survey appeared in the consumer monthly's June issue. Twenty-two lawn tractors were tested for the report. All were 12-hp, with bagging attachments.

"Although some tractors go beyond the industry's voluntary safety standard requirements, the design shortcomings in other models heighten the risks inherent in any grass cutting machine," said the report.

For three models, the report determined it was too easy to kick the gearshift lever into gear accidentally when climbing on or off the tractor.

Weaknesses found in other tractors included: susceptibility to bucking and rearing; inadequate "deadman" controls; separate controls for speed and direction; slow stopping (3 seconds or more) blades; and noise pollution.

One of the Institute's major objections to the report was its stability test.

Continued on page 27

INDUSTRY

Future Farmers to emphasize turf

BLACKSBURG, Va. — The Future Farmers of America (F.F.A.) is planning to alter its annual contest for high school students to place more emphasis on the turf/landscape market by 1991.

"We have had insufficient emphasis in the turf area," notes Dr. Alan R. McDaniel of Virginia Tech, the man in charge of the contest re-evaluation. "Today, agriculture is not your traditional crop and animal production. Only one person in six in the agriculture industry is directly related to food production."

McDaniel says that the new emphasis on turf-related studies will definitely have an impact on the industry in the future. "It represents an introduction to horticulture, landscaping and turf at the high school level," he says.

Helping McDaniel restructure the F.F.A. contest is assistant Frank B. Flanders of the University of Georgia. Also on the advisory board are Bob Brophy of Cushman; Richard Anderson and Ron Lytle of Kubota; Thomas Carter of Jacobsen; Andy Seckinger of Chipco Specialty Products; and Brian Corsini, Carl Meyer and Andy Klapis of the American Association of Nurserymen and the Wholesale Nursery Growers Association.

"The F.F.A. has noted a tremendous decline in students who want to study strictly agriculture," says Brophy. "Most of the emphasis is now in urban horticultural areas. We gave them parameters of what the industry is looking for." □

NEWS *from page 26*

The test consisted of placing tractors on a 15° slope with a 175 lb. rider, grass catcher in place with 25 lb. weights in each bag. The engines were set at full throttle with the gear shift lever in the highest gear. The clutch was released quickly to determine the extent of front wheel lift-off. Four of the machines experienced "extreme" front wheel lift-off.

"To get the exact scenario," explains Liskey, "you have to make an awful lot of assumptions. That people stop on 15° slopes, with a loaded bag, run the engine at full throttle and pop the clutch. It would have been nice if they had talked to the industry a little bit more prior to discussion of some of the points relative to safety recommendations."

Liskey said the institute would be responding to the report. □

MARKETING

Survey explores buying habits

OAKLAND, Calif. — Most California gardeners spend between $50 and $299 a year on garden supplies and plant material, according to the University of California Cooperative Extension.

The UCCE recently conducted a survey to determine the buying habits of home gardeners around the state.

The survey results show that gardeners who shop at full service garden centers spend the most money. Almost 54 percent of these shoppers spend $150 or more in an average year, while only 37.5 percent of those who shop at other businesses for their supplies spend that much.

The decorative value of gardening was ranked as the most important reason to garden. □

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ATHLETIC TURF

LOTS OF HOLES... Fifty-three cleat marks per square foot. That's what you should expect if you have a heavy-traffic football field. That's the number of holes put into a professional football field between the hash marks, according to Sports Turf Managers Association president **Steve Cockerham**. Of course, because the hash marks are closer together in professional football than in college and high school, that number would be high for most fields. The answer to these high-wear areas? "The new ryegrasses just may be something that we can consider as an athletic turf, at least here in Southern California," Cockerham said at an STMA meeting in Anaheim recently.

CHANGES FOR THE CHIEFS...Chip Toma has been named head groundskeeper for the Kansas City Chiefs, effective July 1. Toma takes over from his father **George Toma**, who will remain as head groundskeeper for the Royals and also consult for the Chiefs. George will also be doing more consulting and speaking nationwide. "I'm definitely going to finish my career with the Royals," he promises. "They've treated me like a king."

Chip visits the Orient in August to help the Asian Games Committee and conduct athletic turf seminars in Hong Kong and Taiwan. "China is hungry for information," says Chip. "They're competent people, and they want nice fields, but they don't yet have the know-how or proper equipment."

BRONCOS SEED NEW FIELD... If all goes well, the Denver Broncos' new practice field will begin to take seed sometime in mid-July. **Ross Kurcab**, practice field manager, will use a 70/30 blue/rye turf mix after construction crews install an underground heating system. "The bluegrass comes through the winter better," says Kurcab, "and the rye gives us the aggressiveness we need. Our goals for this field are safety and playability." The team expects to be using the new practice field and facility by March of 1990.

The mix includes Touchdown, Challenger, Columbia, 834, Del Ray and All*Star.

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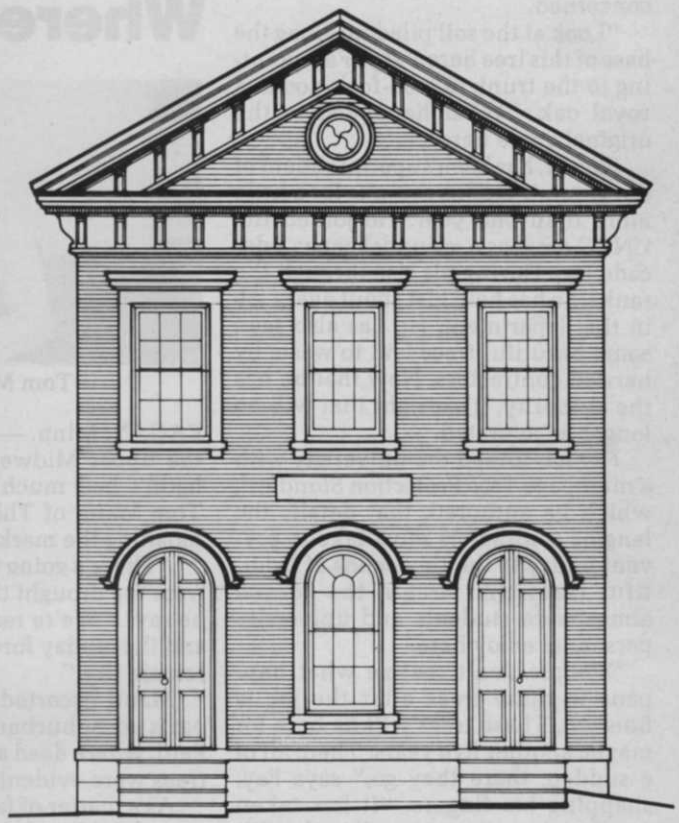

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Setting standards

GREENSBORO, N.C. — On this hot May day, there's more action going on outside the University of North Carolina Greensboro's Physical Activities Complex than there is within. The students left last week, while the construction crews remain, putting the finishing touches on the landscape of the new $15.7 million building.

Therein lies the problem.

Apparently operators of the contractor's large equipment have damaged four large, stately oaks adjacent to the building. The obliterated grade, excessive compaction, slit roots and chipped bark on the trees is serious enough to kill them.

Chris Fay knows this, and he's concerned.

"Look at the soil piled up along the base of this tree here," says Fay, pointing to the trunk of a 50-foot, doomed royal oak. "What happened to the original grade here?"

Fay, 31, has been superintendent of the grounds on this campus for a little more than one year. He joined the UNCG crew as a groundskeeper a decade ago. During his rise through the ranks, he has held just about every job in the department. He has also seen some beautiful trees laid to waste by harried contractors. Now that he has the authority, it's a sight that will no longer be tolerated.

Fay has armed the university with a nine-page *Tree Protection Standard*, which he authored, that details the lengths contractors must take to prevent injury to the thousands of beautiful trees that create the serene atmosphere students and university personnel enjoy here.

"People don't realize what happens to these trees after the job is finished. These trees will be here for maybe another five years. Then, all of a sudden, there they go," says Fay, snapping his fingers. "It has taken people a long time to realize that it's the damage done now, during construction, that is killing them."

Fay's Standard calls for construction crews to set up barriers around a tree's drip lines. There are specifications for excavation, grading and fertilization. Even the designer's role is outlined: "It shall be the designer's full responsibility to insure that the contractor complies with the spirit and intent of this standard throughout the construction project." In addition, Fay photographs trees before, during and after a construction crew has gone to work near it.

Because the Standard is so new, Fay hasn't attempted to enforce it yet. Still, he feels it is only a matter of time.

"I'm the guy that has to live with this after they're gone," he says, looking out across the landscape of the complex. Sometimes you've got to get downright ugly with people before they do the right thing. I say that if you can't go full speed ahead in protecting the tree—if you're going to end up changing the grade around its base, cutting extensively around the roots—take the tree down and put a new one in."

If you're a tree on this campus, Fay's action on your behalf couldn't have come at a better time. UNC Greensboro is embarking on a massive facelift, spending more than $53 million on new buildings, improved athletic fields and the removal of several campus streets, which will be replaced by turfed areas. Construction crews will be a familiar sight on campus well into the 1990s.

—Will Perry

Chris Fay

Where's the water?

Tom Mann

EAGAN, Minn. — Meanwhile, out in the upper Midwest where they still hadn't had much water this spring, **Tom Mann** of The Caretakers is bemoaning the market.

"There's going to be a lot of fallout from the drought this year and next," he says. "We're really minus on rain, and the 30-day forecast calls for us to remain dry."

Mann escorted reporters around parts of suburban Minneapolis/St. Paul, where dead and dying grass and trees were evident.

As a matter of fact, The Caretakers put a good bit of change in the coffers last fall by hauling water from Eagan (which is supplied by an aquifer) to other less fortunate suburbs. "Most of our properties are irrigated, so we spent last June 15th to August 21st hauling water," Mann notes.

Yet, competition is changing rapidly with the addition of a new I-494 bridge linking the fastest-growing suburbs of the Twin Cities.

Eagan's growth itself is attributable to the nearby international airport. "We've got lots of corporate headquarters around here, yet it's getting tougher all the time," says Mann, a former president of the Minnesota Professional Lawn Care Association. "When the bridge opened, that meant a lot of competitors came marching into the area."

He says that dealing with problems associated with the lawn care/landscape business are sometimes discouraging, despite having strictly corporate accounts.

"We feel we function best with a corporate-type client," he says. "The client needs the help. Plus, you have a height of flexibility."

What is the main ingredient still missing from Minnesota landscapes? Color.

"We're basically green on brown. Sophisticated landscapes are a rare bird around here. We sorely need a few companies to add color to their environments.

And when that time comes, The Caretakers will be there.

—Jerry Roche

Using the ballfields

EDEN PRAIRIE, Minn. — Not far from Mann's operation lies the quiet yet thriving commmunity of Eden Prairie. And because this, too, is a fast-growing area, **John Skranka**, landscape manager for the entire school system, has his hands full: 240 acres, eight building sites, eight soccer fields, four football fields, three baseball fields and four softball fields.

But he's got an ace in the hole:

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Brown patch is no match for a Rubigan® tank mix.

Eden Prairie park supervisor Wes Dunsmore.

"We work closely together," notes Skranka. "We borrow his equipment, he borrows ours. We do a lot of sharing ideas and probably see each other a few times a week."

Skranka also has another ace: he's a member of the city's volunteer fire

John Skranka

department. And that means that when he needs a basket truck for off-the-ground work, one is available.

Because of the fast-growing area, money for new projects is not hard to come by.

"We're going to open up another school and have a ground-breaking on another," says Skranka. "We're remodeling the high school and putting in a new varsity football field."

But talk about your high-traffic areas—Eden Prairie's got them!

"Right now, the city's big on soccer," Skranka relates. "So we're letting them use six fields at the high school. Those fields are used two hours a night, six to 10 hours a week. The other ones at the high school are used another four hours a day.

"We have a problem scheduling seeding. We're going to pull two fields out of use when school's out for seeding."

Since one of the new schools is going up on the former site of Northrup-King Seed Co. test plots, he still gets consultation from people there. He uses Northrup-King Athletic Pro seed mix for most of the fields with Par-Ex fertilizer.

Skranka also swears by a new John Deere AMT-600 utility vehicle that supplements Jacobsen and Gravely mowers. Irrigation equipment (all fields are irrigated) is mostly Toro with some Buckner and Hunter.

"We're a lucky-type district because we're growing," Skranka, a 14-year veteran admits. "If we weren't, it'd be a lot harder to get the equipment and sprinklers."

—Jerry Roche

Jacklin Seed Co. has named **Wade Blowers** research assistant of the warm-season grass seed breeding programs. He will also be involved with production research.

Henry Donselman, Ph.D., has been named vice president, director of research of Rancho Soledad Nurseries, Inc. He will oversee new research and development in plant production, coordinate the acquisition and testing of new ornamental plants, work closely with Ranch Tissue Technologies (the nursery's tissue culture division), oversee the production of palms and other tropicals in Hawaii at Palms of Paradise (the nursery's tropical interior plant nursery) and be available for consulting in landscape and interiorscape installations.

The first five inductees to the National Landscape Association's Hall of Fame are: **Dr. J. Franklin Styer**, former owner of J. Franklin Styer Nurseries, Concordville, Pa., **Harold**

W. Blowers

M. Hill

Hunzicker, of Hunzicker's, Inc., **Wellington Kennedy**, of The Kennedy Nursery, Inc., **Dr. Richard P. White**, former executive secretary of the American Association of Nurserymen and **Dr. L.C. Chadwick**, author of the association's Landscape Newsletter in 1945 and 1946.

Mark W. Beliczky has been named director of marketing at Lesco, Inc. Beliczky was formerly associated with ChemLawn Inc.

One of the nation's first interior landscape contractors, **Robert Herrick Carter**, recently died of cancer. He was 69.

Carter, former owner of Van Hericks Environmental Planting from 1946 to 1987, is credited with pioneering the use of flowering plants and trees in commercial developments in southern California in the mid 1940s. Carter is survived by his son, Robert, daughters Nancy and Catherine and two grandchildren.

Riverdale Chemical Company's new regional sales manager is **Lonnie M. Pell**. Pell will be responsible for the company's sales activities in the southeastern portion of the United States.

Martha Hill, landscape technology instructor for Hinds Community College in Raymond, Mississippi, was installed as president of the American Society of Landscape Architects.

The Nebraska Turfgrass Foundation elected new officer and directors at its recent conference. The re-elected officers include **Larry Hergott**, president, **Hans Bross**, vice president, and **Twyla Hansen**,secretary-treasurer.

S. Rom

J. Kelly

Newly-elected board members are **Steve Paustian, Hans Bross** and **Carlos Stimson.**

The new executive vice president of operations for Chapel Valley Landscape Company is Stewart Rom. Rom is the newly-elected president of the Landscape Contractors Association for Baltimore, Washington, DC, and northern Virginia. Also promoted were **Paul Drummond** to manager of business development, **Bruce Phillips** to Virginia landscape department manager and **Charles Whealton** to Maryland maintenance department manager.

Clemson University Extension Service horticulturist **John Kelly** has been honored by two horticultural organizations.

The American Society for Horticutural Science recognized him as an outstanding young educator and the South Carolina Nurserymen's Association presented him with an award for outstanding service to the state's nursery industry.

Ken Jenner, co-founder and third executive director of the California Landscape Contractors Association, died Jan. 29 in California. He was 83.

Jenner began in the landscaping industry in the 1940s and participated in the organizational committee that created the CLCA in 1951. As the groups part time executive secretary, Jenner's first budget was under $2,000. When he retired in 1972, CLCA had a budget of nearly $250,000.

During his tenure, CLCA established its Trophy Awards program, offering health insurance to members, launched a public relations program, opened a second office in southern California and published the book *Landscape Management* by James W. Griffin. Jenner is survived by his wife Betty, daughter Joan Rowles, grandson Michael Sewell and brother Theodore H. **LM**

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COVER STORY

THE BEST OF THE ROADSIDES

When the National Roadside Vegetation Management Association held its conference last fall, it named annual contest winners. Here are brief profiles of three outstanding programs.

The use of wildflowers along North Carolina's highways wasn't implemented as a cost saving measure, says Bill Johnson of the state's DOT. Their purpose is simply to bring color to the roadway.

Innovation in N. Carolina

by Jerry Roche, editor

Landscape engineer Bill Johnson and the North Carolina Department of Transportation took the NRVMA award in the state/federal category. Johnson, one of the founders of the NRVMA, likes to think of himself on the cutting edge of the industry.

"We try to be innovative," he notes. "We try to do things first, change things, look at new programs. We really react well to public sentiment and public influence on our program."

One of Johnson's pet projects is his wildflower program.

"There was a lot of interest in wildflowers. We reacted quickly. We seem to have been a little more blessed with resources than some groups across the nation.

"The wildflower program is probably the most popular thing I've ever seen happen in DOT. It's more popular than roads, really. The response is overwhelming. It's a visible change."

Johnson said he heard his boss speaking to a group recently, saying that he's been complimented on four things—and three had been on the wildflowers.

"We can't save money using wildflowers," Johnson continues. "That was not its purpose. The purpose was to add color to the roads, to improve aesthetics, to give an interest that is fairly low-maintenance."

What is spent on the wildflower program—and more—is saved by implementing plant growth regulator and low-volume herbicide spraying programs.

"We have documented cost savings on both of those," says Johnson. "The wildflower program is about $250,000 a year. The other savings are considerably more than that."

Controlling vegetation in North Carolina is no small task. The 400-person Landscape Unit maintains 285,000 acres of routinely-mowed vegetation and nearly 300,000 total acres with reforested areas included. This acreage is among the nation's largest state-maintained highway system with more than 76,000 miles of roadways.

Because of its location smack-dab in the middle of the transition zone, the state DOT maintains a good working relationship with North Carolina State University, especially Dr. Joe DiPaolo (who made the NRVMA award nomination). DiPaolo has done research on turfgrass species that has saved Johnson some money.

DiPaolo, in his nomination letter, notes a 50 percent savings in roadside vegetation control in North Carolina with the use of maleic hydrazide or mefluidide + chlorsulfuron as growth regulators on tall fescue.

"In 1971, fescue was used into the ocean and was certainly not adapted to a large part of the state," observes Johnson. "We now use three different warm-season grasses. We also use regular Kentucky-31 tall fescue, bluegrass and some of the hard fescues in our cool-season mixes. Centipede is a warm-season material that we're very interested in. It's shown some adaptation into the cool-season areas because of its low maintenance. It's really a no-mow type of material."

And how's this for planting? In preparation for the 1987 summer Olympic Festival, the DOT planted an unbelievable 53,000 dozen annual flowers, 2,100 junipers, 1,900 crepe myrtles, 1,000 pampasgrass plants, 5,000 daylilies and 28,000 cannalilies along 20 interchanges—in six months.

"The wildflower program is probably the most popular thing I've ever seen happen in DOT," says Bill Johnson of the North Carolina DOT.

Finally, one more new program with which the DOT is experimenting involves the state's Wildlife Resources Commission. Recognizing that roadsides serve as a linear wildlife refuge, a pilot project provides roadside feeding areas for small game.

"An added benefit is that this should reduce our maintenance costs," says the ever-frugal Johnson. "We want our roadsides to be more attractive to people and an asset to wildlife as well. From these projects we will be able to develop a program that could receive wider application in the future.

Two decades of control

by Will Perry, managing editor

Ray Dickens, Ph.D., professor of turf management at Auburn University, was presented with the NRVMA's award in the academic category in appreciation of two decades of service to managing roadside vegetation.

Dr. Dickens initiated and developed Auburn's first course in turfgrass management soon after joining its academic staff in 1968. Today, as the primary consultant to the Alabama Highway Department, he remains among the pioneers doing effective research on managing roadside vegetation.

His early work showed the effectiveness and economy of weeping lovegrass as a temporary cover when seeded in a seed mixture. At the same time, he was helping identify the areas on which crown vetch, an attractive cover, is adapted.

Dr. Dickens also provided the research needed to select *Sericea lespedeza* adapted for acid road cuts. This cooperative work resulted in the release of two cultivars recommended specifically for highways: *Interstate* and *Interstate 76*.

Dr. Dickens' recent research on highway vegetation has emphasized chemical growth control, particulary MSMA and 2,4-D, in lieu of mechanical mowing. Dr. Dickens' cost-effectiveness studies of fan-cage sprayers compared to other application methods is indicative of research that has resulted in a sharp drop in maintenance costs for the state of Alabama Highway Department.

Dr. Dickens' research is largely re-

Dr. Ray Dickens, of Auburn University, has been instrumental in Alabama's roadside management.

sponsible for the state eliminating tall weeds and grass in favor of bermudagrass during the summer. Winter weeds are controlled by herbicide applications during bermudagrass dormancy.

Dickens' 1978 study of several roadside mulch materials showed that seedling establishment is increased by adding cellulose, excelsior, or other mulch materials to erosion control nettings. He also showed that incorporating plant nutrients into the adhesive appears to be an acceptable method of applying fertilizers to mulched areas.

Dr. Dickens also aids in writing and interpreting construction specifications and arbitrating conflicts between contractors and the state highway department.

Orange County Weed Busters

by Terry McIver, associate editor

Bill Tidwell, winner in the county category, is the supervisor for EMA/Public Works for Orange County, Anaheim, Calif. Originally a park ranger, Tidwell has steadily progressed up the educational and professional ladder. He earned his masters degree in environmental studies, and holds lifetime teaching credentials in ecology and agriculture.

Tidwell's division is responsible

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for managing all vegetation, including trees, brush, noxious weeds, grass and litter on all county-owned land. This includes 813 miles of county-owned roadway; 303 miles of flood control channels, basins and drains; 15,000 acres of park land and a few hundred thousand landscape trees. The total area adds up to 26,000 acres.

Aesthetically, Tidwell's "Weed Busters" crew has kept up with county development and growth. The unit has managed to keep the areas under its jurisdiction attractive despite the hazards of a roadway system which operates at near rush hour volume all day long.

"The road shoulders are kept free of weeds with a program of tank-mixing a post-emergence and pre-emergence herbicide to keep weed seeds from germinating while controlling existing weeds," says Tidwell. "The county is using low maintenance landscaping instead of high maintenance exotic plants which require constant care, minimizing the time the crews must spend on the well-traveled highways."

Tidwell says Orange County's pesticide section excels in the areas of application and applicator safety. Pesticide use is regulated by agricultural commissioners in the state, however, because the county is a public agency, the management has directed the goup to comply with all Cal-OSHA safety requirements as well, says Tidwell. Notable is the fact that all personnel in the section have a state applicator's license, and all suspected groundwater contaminants were removed three years before the passage of Proposition 65.

Bill Tidwell: Dealing with Proposition 65 positively.

For extra added innovation, Orange County uses a high-line boom for certain applications. The unit's spray crew can treat a 14-mile long, 300-foot wide stretch of flood control channel in 12 hours. On-board computers are also used in the trucks to track scheduling and progress.

Perhaps the most innovative aspect of Tidwell's operation is the use of computerized herbicide recommendation inventories which include roadways, flood control channels and parks. These recommendations are used to schedule activities, document use and order materials. It is combined with the vegetation section of a Maintenance Management Plan that is used for all the county's public works operations. This information allows the manager of public works to determine that all functions are staying on course and on time while staying within the budget for that activity. "Research of this current information allows excellent forecasting for future budgets," Tidwell explains.

ED. NOTE: Mayor Jerry E. Abramson of Louisville, Ky. and the city of Boca Raton, Fla. tied for the NRVMA award in the municipal category. They were not included in this installment because of space considerations, but will be noted in future issues of LANDSCAPE MANAGEMENT. **LM**

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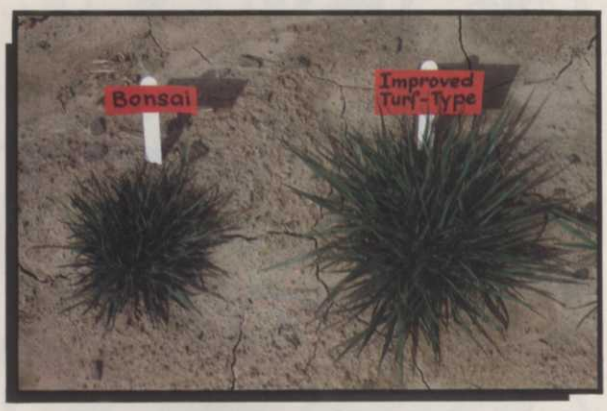

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Dollar Spot first appears as yellow-green blotches on grass blades. Overall view of affected area shows patches from a few inches to several feet in diameter. Treat preventively at a rate of 1 oz./1,000 sq.ft. every 28 days.

Summer Patch first appears as small patches of light green turf but can fade within hours to a light straw color. Research indicates best results are obtained with a preventive application of 4 oz. when soil temperature reaches 60-70°, followed by a second application 30 days later.

Red Thread, in its latter stages, is distinguished by the presence of bright coral pink thread-like structures 1/16-1/4 inch in length. Use Banner preventively, before disease problems begin, with 2 oz. every 14-21 days.

Anthracnose is most severe on Poa annua and first appears as irregular patches of yellowing turf which eventually turn bronze before fading to light tan. Prevent damage with 1-2 oz. of Banner every 14-28 days.

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Powdery Mildew gets its name from the early stage growth of a gray-white powdery fungus on the leaf surface. In cases of high incidence, entire turf areas may appear dull white. Prevent fungus growth with 1-2 oz. every 14-28 days.

Rust shows up first as light yellow flecks on the grass leaves. If left untreated, leaf surface will eventually rupture and yellow-orange or reddish-brown pustules develop. Preventive treatment calls for 1-2 oz. every 14-28 days.

Spring Dead Spot appears as circular, straw-colored patches on Bermudagrass leaves just as they begin to green-up in spring. The rest of the plant is affected with black to brown dry rot. University research indicates preventive control can be obtained with 4 oz. applied in the fall.*

Brown Patch is recognized by a "frog-eye" pattern formed by the diseased turf encircling green, unaffected plants. For prevention, apply 2-4 oz. every 10-21 days. If disease is already present, apply 2 oz. with a registered contact fungicide.

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Breeding lessened the amount of coarse fibers in tall fescue and retained and improved its tolerance to heavy traffic. The newer turf-type tall fescues are, in almost every regard, superior to the pasture-types.

TALL FESCUES FOR DRY, URBAN LANDSCAPES

Successful breeding and selection programs of tall fescues have produced the turf needed to fill in the hot, dry, low-maintenance landscapes where bluegrass often fares poorly.

by Bob Morris and John Van Dam

Of the cool-season grasses, tall fescues have become a frequently-planted species for year-round green color in dry urban landscapes.

Originating in Europe, fescues were first introduced as pasture grasses. Gradually, five varieties were developed and used for turf purposes.

Kentucky 31 and Alta are excellent choices for areas that need a year-round green turfgrass cover but do not necessarily demand a high level of quality.

With the expansion of the turfgrass industry, there arose the challenge to develop turfgrass varieties that looked good, were heat tolerant and were capable of survival in dry, urban landscapes. Turfgrass scientists and breeders, attempting to fill the void, turned to the heat and drought tolerant tall fescues. They were known to grow on marginal and heavily compacted soil and sustain themselves at lower levels of nutrition than most other grasses.

A closeup look at leaf blades of Kentucky bluegrass (left), perennial ryegrass (right) and pasture-type tall fescue. Pasture-types were originally developed for animal grazing but found acceptance in less expensive, low maintenance landscapes.

In addition, tall fescues are relatively pest-free in low humidity areas. Their good shade tolerance ranks them superior to any other choice. They are recognized as the cool-season grasses most likely to persist in hotter, dry regions of the United States.

Tall fescues do have limitations to their heat tolerance. They have not performed well, historically, in the Palm Springs area where a combination of very hot temperatures for extended periods have caused them to fail. At the opposite end of the thermometer, tall fescues have failed during the winter months in the northern U.S. where temperatures have dropped to sub-zero without a protective snow cover.

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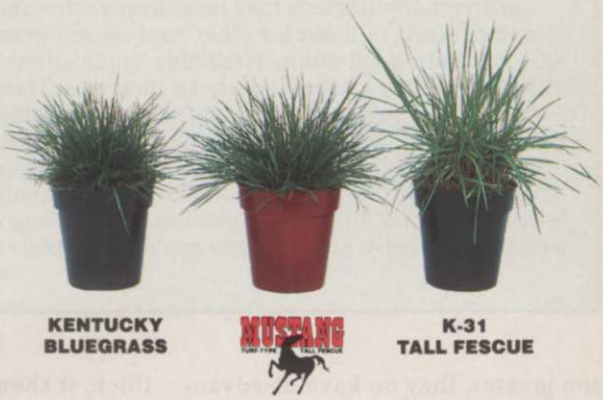

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ESTABLISHING A TALL FESCUE LAWN

Like other cool-season grasses, tall fescue lawns can be started from seed. The following suggestions will improve the chances of obtaining a successful, high quality stand:

- Even though tall fescues perform well on poor quality soils, they perform better if the soil and seedbed are well prepared to maximize the potential for a stand of high quality.
- Pasture-type and turf-type tall fescue seed should never be mixed for the same turfgrass area. There are some advantages to blending different varieties of tall fescue.
- The preferable time to seed tall fescues in dry climates is in the fall. Spring seeding is the acceptable second choice. The fescue varieties are slower to germinate than perennial ryegrass but faster than Kentucky bluegrass.
- Tall fescue seedlings are relatively slow to mature and establish. Following seeding, traffic should be kept to a minimum until the stand becomes established.
- Low-impact landscapes are usually seeded at six to eight pounds per 1,000 sq. ft. (260 to 350 pounds per acre). The rate for high impact landscapes is eight to ten pounds per 1,000 sq. ft. (350 to 435 pounds per acre).

If the area is to be sodded, the fescue selection must be turf-type, since the pasture-type is not available as sod. Sod can be purchased either as a blend of several turf-type varieties or as a mixture of Kentucky bluegrass.

Sod producers generally mix tall fescue seed with a mildly aggressive Kentucky bluegrass, at a rate not exceeding five percent by weight. This is done to give the sod strength, improve the sod's recuperative potential and make it easier to handle during installation. Some of the bluegrasses used include: Baron, Merit, Ram I, Nassau, Columbia, Adelphi and Parade.

Maintenance of a tall fescue turf stand after seeding or sodding is similar to that of any cool-season turfgrass. Deep and infrequent irrigation will encourage a deep root system and enable the stand to persist during periods of stress.

Fertilizer applications may be at lower rates and at reduced frequencies in contrast to those for other cool-season grasses, and yet the grass will maintain good color. Herbicide applications should be restricted until the seeding grasses have been mowed at least three times.

Tall fescue lawns are slow to mature so traffic should be kept to a minimum throughout the entire establishment period.

Disease problems on newly seeded lawns generally relate to over irrigation. Frequent watering on slow-draining soils may cause the new lawn to die back in isolated patches. Scheduling deeper, less frequent irrigations usually remedies the problem without the use of fungicides.

—The authors □

son grasses, they do have disadvantages (table 1). Their water use rate can exceed that of Kentucky bluegrass as well as that of more heat-tolerant, warm-season grasses like bermudagrasses and zoysiagrasses. Tall fescues are bunchgrasses. They grow in clumps and do not spread to form a sod, like varieties of bermudagrass and bluegrass. If a stand of tall fescue is not properly maintained, it will begin to bunch. Leaf blades will be noticeably wider and the texture of the stand will become increasingly more coarse. Their recuperative potential is very poor so recovery from injury is slow. To keep a tall fescue lawn dense and thick, it should be overseeded, ideally, each fall.

Sorting the varieties

Tall fescues are further divided into two more groups: pasture-types and turf-types. Fine fescues are very narrow-bladed, shade-loving grasses that do not grow well in hot, desert climates. In contrast, tall fescues do well in such an environment.

Pasture-type tall fescues are coarse-textured grasses represented by varietal names such as Kentucky 31 (K31 or KY31), Alta, Fawn or Goar. Pasture-types were originally developed for animal grazing but found acceptance in less expensive and low maintenance landscapes such as airfields, roadsides, athletic fields and soil conservation projects where their coarse texture was not objectionable.

Among the pasture-types, Kentucky 31 has been the leading performer for turfgrass areas. Pasture-types are still used for low maintenance turf areas.

Turf-type tall fescues

Turf-type tall fescue cultivars represent recent advancements in turfgrass characteristics over the pasture-types. Breeding and selection programs begun in the early 1960s centered on developing fine-leaf textured fescue cultivars that also contained the many favorable characteristics of tall fescues. This breeding effort produced more than 40 varieties, the first of which was released in 1979. Now, a second generation of turf-type tall fescues has been released, as represented by the introduction of Jaguar, Bonanza, Rebel II, Arid, Apache and Monarch. This new, second generation has shown some very significant and dramatic improvements over its predecessor.

New and improved

While some turf-types have performed better than others, all have demonstrated marked improvements over pasture types (table 3). When grown side-by-side with pasture types, turf-type varieties have a darker green color, finer texture and denser appearance. This gives the turf an appearance that closely resembles Kentucky bluegrass.

As the turf matures, the stand begins to thin due to losses from crowding, insects, disease, mechanical injury and normal plant senescence. As with pasture-type tall fescues, turf-types are also bunch grasses. They do not spread to fill in open or weak areas like the rhizomatous bluegrasses are able to do. These areas, consequently, must be reapaired by reseeding or resodding. Again, an annual overseeding in the fall will help to maintain the turf as an attractive sward.

Even though tall fescues are relatively pest-free, some diseases are still problems. Diseases such as pythium, brown patch and leaf spots still exist. The newer varieties have shown improved disease resistance. In addition, the newer tall fescues are quite shade tolerant.

In the past, one serious drawback to the use of tall fescues was their appearance after mowing and trimming. The cut ends of the tough, fibrous leaf blades turned brown and ragged. With newer turf-type vari-

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eties, this problem is substantially reduced. Breeding lessened the amount of coarse fibers but retained and improved their tolerance to heavy traffic. The newer turf-type tall fescues are, in almost every regard, superior to the pasture-types.

Landscaping with fescues

In general, tall fescues are extremely well suited for landscape and recreational areas where water availability and quality is not a problem, low maintenance is desired, appearance is not of prime concern, and establishment and maintenance costs must be minimized. They are an excellent choice for athletic, play and recreational areas, commercial landscapes, low maintenance parks or other areas where the grass is subject to a great deal of traffic. **LM**

Bob Morris is an extra extension specialist, University of Nevada, Reno, John Van Dam is a turf advisor, University of California Cooperative Extension. Next month, part two of this artice will appear under the title "Managing Tall Fescue In Urban Lakescapes."

TABLE 1.

ADVANTAGES AND LIMITATIONS OF TALL FESCUE AS A TURFGRASS

ADVANTAGES	LIMITATIONS
Deep rooting for drought avoidance	Higher water use than warm season grasses
Moderate fertilizer use	Poor mending or recuperative power
Good recovery from drought	Moderate salt tolerance
Relatively pest free	Requires good quality water
Once established, tolerates foot traffic	Should be overseeded in the fall of each year to maintain density
Tolerates poor soils	
Good shade tolerance	
Green all or most of the year	

Source: The authors

TABLE 2.

RELATIONSHIP BETWEEN FESCUES USED AS TURFGRASS

FINE FESCUES (*Festuca rubra*)	TALL FESCUE (*Festuca arundinacea*)	
	Pasture-types	Turf-types
Very narrow-bladed, shade-loving cool-season grasses of the Northern climates. Not recommended for hot desert climates.	Wide bladed, cool-season grasses for low maintenance areas. Ex: Kentucky 31, Fawn, Goar, Alta.	Narrow-bladed, cool-season grasses for medium to high maintenance turf areas. Ex: Rebel, Mustang, Olympic, Jaguar, Falcon, Adventure, Arid, Monarch, Apache, Bonanza, Rebel II.

Source: The authors

TABLE 3.

IMPROVEMENTS IN TURF-TYPE TALL FESCUES OVER PASTURE-TYPES

- a darker green leaf color
- 33% finer leaf texture (narrower blade width)
- denser growth habit
- improved persistence (longer life)
- improved disease resistance
- better shade tolerance
- superior tolerance to traffic
- improved mowing qualities

Source: The authors

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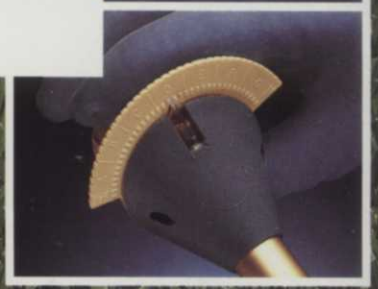

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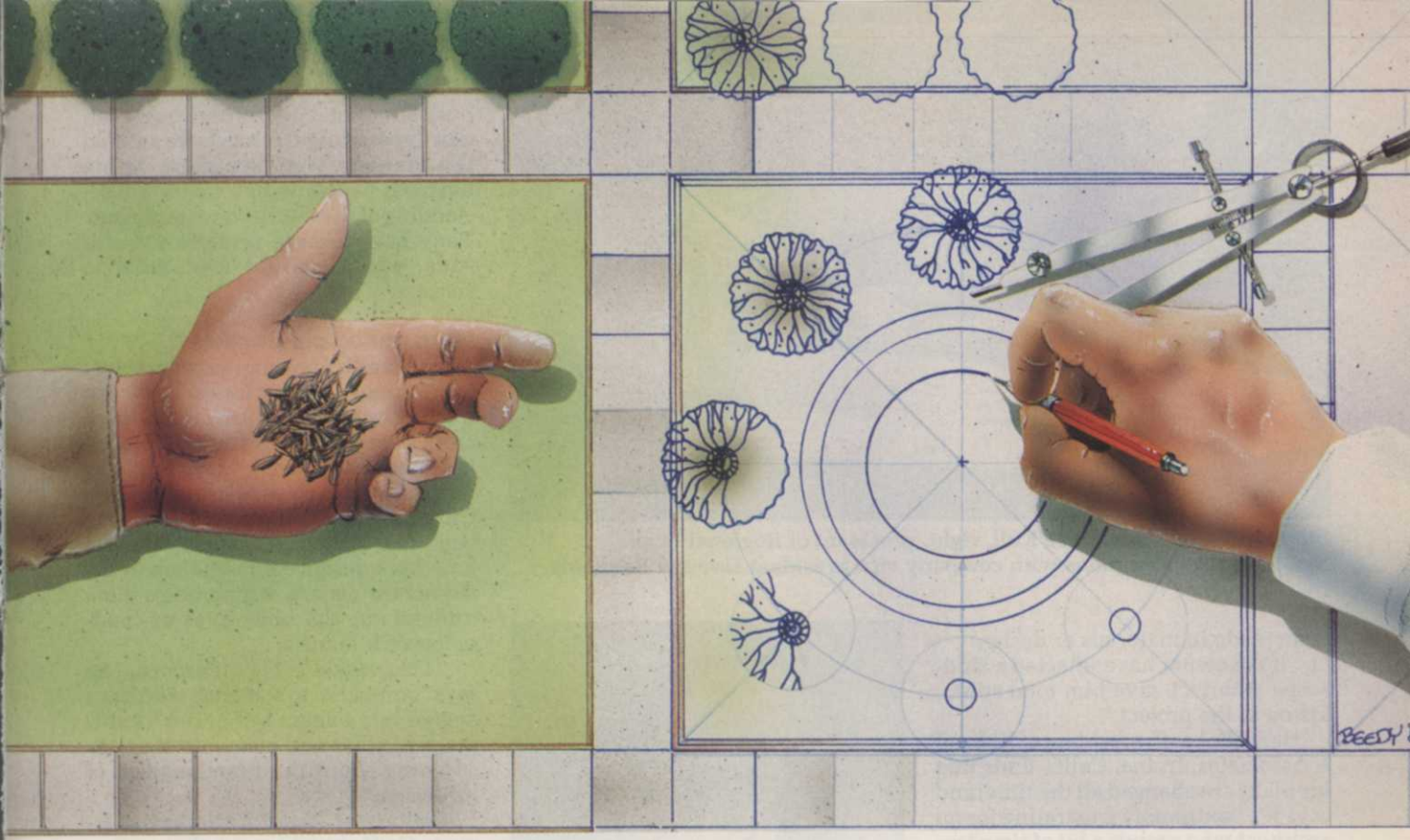

PLANNING FOR PROGRESS

In 1981, ambitious contractors and architects, realizing that growth required mutual respect and cooperation, drew up new plans for progress. Have things changed for the better?

By Terry McIver, associate editor

The early 1980s was a period of reflection for professional landscaping. Forward-thinking landscape architects and contractors met to examine the state of the industry. They realized some changes were in order, and made recommendations to their respective memberships.

The annual Associated Landscape Contractors of America (ALCA) "Crystal Ball Conference" of 1981 resulted in "To Serve the Client," a joint report by ALCA and the American Society of Landscape Architects (ASLA). It revealed that too often architects and contractors suffered from lack of leadership and apparent mutual mistrust.

According to the report, "the landscape contractor has exhibited something of an inferiority complex in his relationship with landscape architects." The architect was considered timid, behind the times and lacking in forceful supervision.

Where to improve

Improvement would depend on the actions of both groups. The landscape architect, the report read, must "...forcefully vocalize his leadership responsibility in the industry." The contractor must "assist in promoting the landscape architect generally and on a project basis, either as a private landscape architect or as part of a design/build team."

Is today's landscape architect a better leader than he was 10 years ago? And is the contractor more apt to accept and appreciate the architect's craft?

Tom Lied of Lied's Nursery Company, Inc., Sussex, Wisc., was on the 1981 committee. He says leadership by landscape architects has improved in the country's more progressive areas, such as on the coasts and in certain Chicago-area markets. "These are the pacesetters when it comes to accepting the landscape architect as an important part of what they do," he says.

According to Lied, landscape architects in these markets have benefitted from the progressiveness of those homeowners and developers.

Lied believes there is a prolifera-

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Step 1: communicate. Dave Kull, right, president of Regional Land Systems, discusses plans with company vice president Howard Reynolds.

been made in materials or design.

"If the owner has contacted a landscape architect, give him total supervision of the project."

Harry Kobzeff, president of Kobzeff & Associates, Irvine, Calif., finds that his plans are changed all the time, and says it's "extremely frustrating for an architect who spends a lot of time trying to get things together and to work, then goes out into the field and finds that the contractors are either too busy or too unsophisticated. So they look at the plans and get a general idea and then do it their way."

Architect Walt Young, president of Walt Young Associates, admits that a set of plans may not be as good as they should be. "As far as where some of these problems occur in the field, it probably does start with the plans," he says. But if there's a question, they (contractors) should call us."

Experience adds up

Young also realizes that some architects probably have not had as much field experience as certain contractors, so they don't understand how things have to be done.

The solution, once again, is to communicate. "It's very important that there are meetings, and each one understands the other's ability."

"Most of the time," relates Dave Kull, president of Regional Land Systems, Irvine, Calif., "the only time we architects deal with a contractor is if there's a problem. This leads to animosity. There's very little opportunity to interface if there's a problem. We need to build the rapport, to let each one know the other's qualifications. When you deal with people only on a crisis basis, it determines your mindset that way.

"Contractors need to communicate to architects the installation costs. When we estimate a job, we struggle to get current cost estimating information. We need a better forum between architects, contractors and clients."

Tom Lied: Avant-garde, farsighted professionals will move the industry forward.

"We're working toward the same goal," reminds Howard Reynolds of Regional Land Systems. "To complete a project that looks good and satisfies the client, so both the contractor and architect make money."

Lack of inspection

Reynolds suggests that architects have done a poor job of promoting field inspections at various times, or going out to pre-bid meetings with contractors, and subsequent meetings throughout the contract's completion. "Work with the contractor," says Reynolds. "Let him know you're going to be inspecting the work. That way, any differences get worked out quickly."

The "Crystal Ball Report" of 1981 described contractors as rugged individualists, but not necessarily good businessmen. Since then however, new types of contractors have entered the market. They are more astute business people with a better understanding of the market and its players. They have a more professional attitude, which should lead them to success.

More caring contractors

"Some landscape architects don't feel too strongly about landscape contractors but I do because I teach them and I know they're going to do a good job after (graduation)," says Prof. Edward C. Martin, Jr. of Mississippi State University. MSU students majoring in landscape contracting must take the first three design courses taken by architecture majors, which helps them understand the objectives of landscape architecture.

"That makes a big difference," he says "compared to someone who has a degree in business but doesn't know the principles and elements of art, or anything about the functionalism of its design."

Contractor Robin Tulleners of Irvine, Calif. has learned that a contractor can guide the architect if he understands what the architect is looking for. Architects, too, he feels, can draw some things that are "pretty corny" or "impossible to build or install," which requires contractor input.

"Communication is the most important ingredient. If each group knows the other's requirements, they'll be much better off."

Designers as leaders

Some contractors believe the industry is best served when its design professionals lead the way. "In fact," says Lied, "if the industry has avant-garde, farsighted, client-sensitive professionals who are willing to take the risk of moving forward, then the industry moves forward."

The big picture indicates that contractors and architects are working well together, much better than in 1981. Accidents happen, things go wrong—just like they do in any profession. But the best in the business adapt, communicate and get on with it. They know that the summer is too short to become mired in contention.

The more contractors and architects continue to experience different working conditions, there is, says Barry Thalden, much to be mutually understood.

"Good landscape architects and good contractors," he says, "still make the best teams." **LM**

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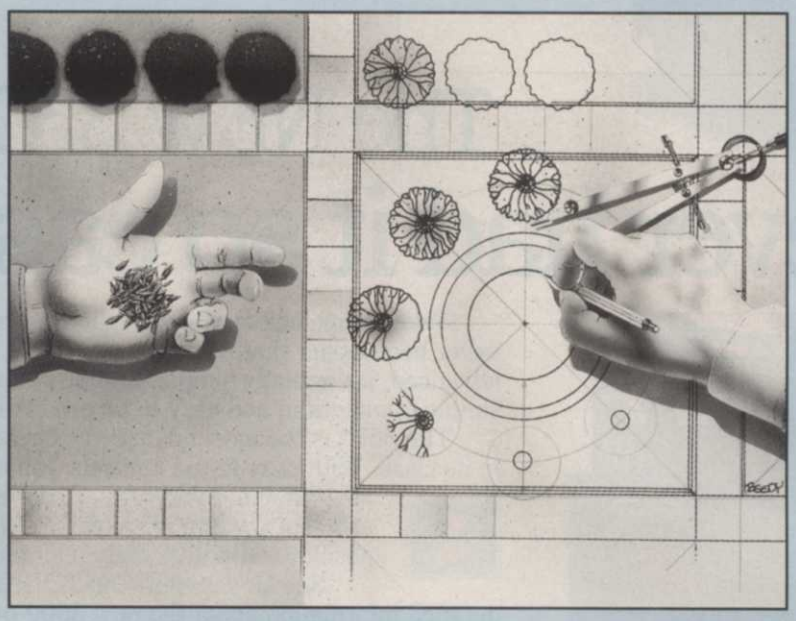
tion of design/build firms in the areas where the architect's image has been bolstered by the general public.

"This," explains Lied, "enables or requires the progressive contractor to build his own staff to serve his clients in an appropriate manner."

Barry Thalden, a private landscape architect in St. Louis, says that during the past eight years clients have become much more familiar with the role of the landscape architect. "As they have worked more with them, their comfort level with that leadership has increased.



PRESERVATION DEPENDS ON SELF PROMOTION

Apart from what they do to get along with each other, architects and contractors have to be concerned with how they get their message across to the public. Professionals from both groups say part of the struggle for success comes from lack of visibility and image.

What they say:

J. Landon Reeve IV: "The market is more competitive. Companies that are more aggressive in marketing are getting the best shot."

Lydia Paneri of Associated Landscapers, Inc., Irvine, Calif.: "We've realized that no two pieces of association literature look the same. We want to make it instantly recognizable as ALCA. Although we hope our members will ascribe to a certain level of ethics, there is no way to say that because they are in ALCA they are a good contractor."

Dave Kull of Regional Land Systems: "The industry has to do a better job of educating clients and prospective clients of what architects do, why it's important and what it costs. Until there is adequate money out there it's not going to change. Unless a developer understands what his landscape costs are going to be when penciling out his development, and includes those costs in his budget, there's not going to be a lot of change.

"Some people who attend our class on architecture realize the work we do, tell us we're worth every penny, and ask us to do a job for them. We also started teaching at the university, which gives us credibility as professionals.

"Local newspapers call us occasionally for information on what's new in the industry. All those things are subtle and don't cost much."

"We're all trying, to reach those clients who want award winning designs."

—Terry McIver □

More opportunity

"Opportunities for landscape architects continue to grow," says Thalden. "Many practice in areas such as planning, historic preservation, administration, research or education where a built project is not the final project."

A disciplined design/build firm is invariably led by the architect. As a multi-disciplined firm, Lied's operates a professional land planning office to serve its professional clients. A design/build staff serves professional clients in the design/build mode, and a retail design staff deals with clients on the retail landscape level. "We cover the market, but try not to confuse the issue by believing that one service is equal to the other," says Lied.

A change in plans

A typical complaint of landscape architects—and one which can be used to symbolize the way the two get along—is that contractors alter the original plans without first consulting with the architect. Either the architect can't be reached, or the contractor quite frankly believes he has a better—or less expensive—idea and doesn't need to inform the architect of the change.

Some contractors will substitute materials to save time or money. As one contractor puts it, "as long as there's no one looking over their shoulder to make sure it's done to spec, they basically take the specs and throw them out the window. Once it's underground, who's going to know?"

The architect has a right to see his plans fulfilled as close to what he has drawn, just as a contractor has a right to submit a bid. In an age of advanced communications, failure to confer prior to a plan change is inexcusable.

Unreported plan changes often signal that the architect has lost control of the project. "If the architect has drawn a set of specifications which detail substitutions—which all of them should—it's up to the architect to tell the contractor to remove (anything that was not specified)," says Richard Chiancone of Anthony J. Chiancone Landscape and Nursery, Inc. of South Euclid, Ohio.

Contractor communication

"Our feeling," says Chiancone, "is that the client has hired a professional landscape architect who must look out for the client's best interest, have the project put out for bid and have it constructed as drawn." Chiancone submits "99 percent" of his invoices to the owner or developer for approval, to insure that no changes have

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Circle No. 147 on Reader Inquiry Card

Many of trees that filled our country's first urban parks have come to the end of their life cycle. Plans must be made to replace them.

THE TREE CHALLENGE

Plans to replace the trees that stood as forerunners in America's first urban parks were never made. Is it too late?

by Terry A. Tattar, Ph.D., University of Massachusetts

Trees are the most important living components of a park or historic garden. No one can argue the beauty of the lawns and the other plantings. *But* trees are the most irreplaceable element in the natural landscape.

Trees, unfortunately, have not been treated well in many of our most prestigious gardens and parks. In contrast to lawns that require, and are provided, regular attention, trees are often treated with benign neglect.

Many of the most important trees in these sites are in poor condition, suffering from abuse and lack of care. At the present level of tree management, large losses can be expected by the beginning of the 21st century.

However, it is not too late to begin to restore the trees in these gardens and parks. How we manage these areas in the 1990s will determine their condition in the early part of the 21st century.

First, a commitment must be made to the responsible management and preservation of shade trees in parks and gardens. We must also recognize and then protect trees from all activities detrimental to their health. Large attractive shade trees can always be present in our urban areas if we can continually protect and restore our trees.

Historical perspective

Many parks and historic gardens were created between 100 and 125 years ago, shortly after the period when Olmstead designed Central Park as a model for using urban space. This great social experiment was soon repeated throughout the United States.

Trees that were planted during that period and still survive are very old.

Their replacements should have been planned and losses anticipated many years ago. But, in most cases, they were not. Instead, I often find a great fear for removing any living trees, regardless of poor health or obvious defective condition. This strict adherance to preservation has caused many problems in parks and gardens and is contrary to the natural life cycle of trees.

We need to learn more about the cycle of life and death of trees, and how to protect trees from stresses that shorten their lives.

Life and death

A living landscape is subject to constant change. Responsible management is needed to plan for the inevitable changes that must occur in the living components of that landscape. Trees, due to their potentially long lifespans, are often overlooked when plans for changes are considered. Mature trees are often considered "permanent" components of a landscape and are expected to remain in an essentially static condition.

This situation has resulted in most parks greater than 100 years old having many large, old trees in various stages of decline and few, if any, replacements. Trees, like all living things, pass through stages of youth, maturity, decline and eventually death. Tree removals are always painful, but are essential to maintain healthy and safe trees on a site.

I have found the overall health of the trees on a site is often directly related to the number of trees planted each year. A program of tree replacement must be continual, and must be planned many years in advance of an-

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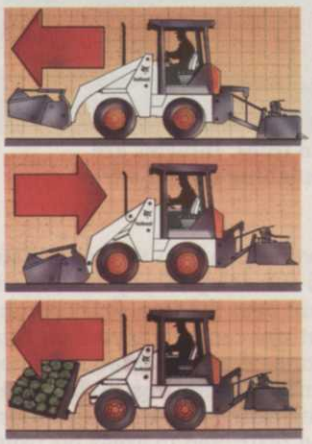

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Construction remains one of the biggest threats to trees. Injuries are caused by raising or lowering of grade and by trenching near the tree. Still, injured trees may take years to die.

ticipated tree removals.

A program of regular tree maintenance, however, can often extend the useful life of a tree indefinitely.

Management and preservation

It must begin when the tree is healthy, and must be sustained. Pruning dead, dying, and defective branches; regular fertilization; and using soil aeration and cushioning mulches to alleviate soil compaction, are examples of tree maintenance activities that promote vigor and extend life. Preventive tree maintenance on healthy trees is a much more successful strategy than attempting to preserve trees in severe decline.

Conflicts in tree care with the care of lawns and gardens are also a threat to the survival of shade trees. Lawns near trees are often treated with lime-based fertilizers and broadleaf herbicides. Most trees grow best at pH levels much lower than lawns. Many of the herbicides used on lawns are known to be cause injury to trees.

We now know that trees roots routinely extend from the trunk twice the height of the tree, and sometimes extend further. Roots are not restricted to the area under the branches, or "drip-line."

Small absorbing roots of trees form in the same area as turf roots. Consequently, lawn care chemicals applied anywhere around trees can be expected to affect tree roots.

Injury by equipment

Injuries to trunk and roots from lawn care equipment can often cause cankers and decay. Similar injuries to roots can be caused by rototilling in annual beds near trees.

Sod should be removed from around the trunks and buttress roots, and a "mulch zone" should be established. This zone should be as wide as possible, and can be covered with a decorative mulch that will eliminate the need for entry of any lawn care equipment near the tree. Only perennial plantings can be allowed on this mulch zone, if any vegetation is desired. Annual plantings, which require periodic soil disturbances, should be restricted to areas far from any woody plants.

Trees can survive and remain healthy where turf and annual plants are grown, but adjustments in lawn and garden care must be made. The use of lawn care chemicals—especially herbicides—must be eliminated or minimized. Careful attention to the soil pH around trees must also be made to avoid high pH stress induced by turf fertilizers. A regular program of tree fertilization using a method, such as liquid soil injection, to both aerate and provide nutrients is also recommended.

Injuries to trunks and roots from lawn and garden equipment must be avoided to prevent root diseases, like shoestring root rot, a leading killer of stress and injured shade trees.

Construction as cause

Construction is the ultimate cause of death of many shade trees. Many trees in parks and gardens, especially in urban areas, are killed each year as a result of earthmoving activities, such as building construction and the installation or repair of underground utilities. The injuries caused by raising or lowering grade, and by trenching around trees, are often fatal.

Construction-damaged trees may take many years to die, but will often begin to decline soon after the construction has been completed. These weakened trees are often attacked by secondary pathogens and/or insects which accelerate their decline.

Because of weakened roots, construction-damaged trees may also be (or can become) hazard trees that constitute a danger to staff and visitors. Preventing all construction activities near trees is essential to their survival.

Frequent pressure for construction projects in parks and gardens is a fact of life in the urban environment. Communication must be established with those planning any construction activities in a park or historic garden *before* any construction begins. During planning stages, construction activities can often be steered away from trees to minimize their impact.

Establish barriers

Barriers to construction activities must be erected around trees *before* construction begins to prevent any "accidental" intrusion near trees. Barriers must be placed as far away from the trees as possible, and must not be moved until all construction activities have been completed. Whenever possible, large areas encompassing many trees and shrubs should be fenced from construction to protect them.

I have found that slatted "snow fences" secured by metal stakes work very well as tree protection barriers. They are easy to install, available and inexpensive.

Effective tree protection focuses on protecting the roots and soil near trees from any and all construction activities during the entire project.

Trees are critical components of parks and historic gardens. Trees must be managed and protected. Change is ineveitable, and some trees must be replaced every year to make room for the next generation of trees. This change is natural and essential if the trees are to remain healthy, safe and available for generations to come.

Trees, however, must be protected from activities detrimental to their health. It is unthinkable to sacrifice a beautiful shade tree for a "weed-free" lawn. Lawn and garden activities around trees must be consistent with what will not harm the tree. Construction activities around trees must be avoided if possible, carefully planned in advance if necessary, and then, firmly restricted in scope, using tree protection barriers to minimize damage to trees. **LM**

Terry A. Tattar, Ph.D., is a professor at the Shade Tree Laboratory of the University of Massachusetts in Amherst. He has written two books and has published more than 100 scientific articles on tree health problems. For the past 10 years, he has acted as a consultant to many historic parks and gardens, including Central Park, Boston Commons, Tanglewood, Old Westbury Gardens and the Newport Preservation Properties.

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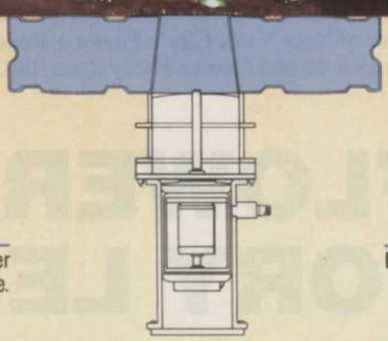

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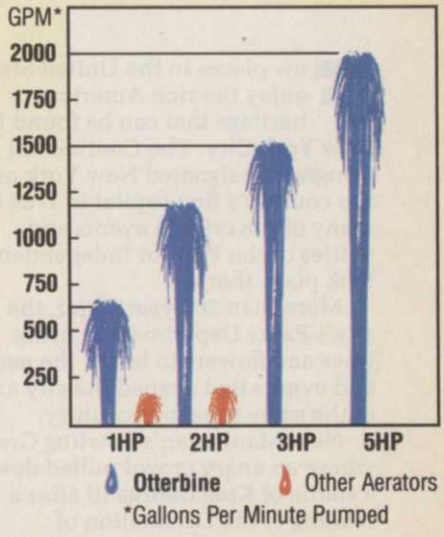

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This year Battery Park is again the focus of New York City's Parks & Recreation Department as petunias were planted at the rate of 7,000 a day to create a 40,000-flower Betsy Ross flag.

A FLOWERFUL HISTORY LESSON

New York City is celebrating its role in American history by planting trees and flowers.

Few places in the United States enjoy the rich American heritage that can be found in New York City. The Continental Congress designated New York as the country's first capital in 1788 and many of the critical events and battles of the War for Independence took place there.

More than 200 years later, the city's Parks Department is using trees and flowers to honor the people and events that shaped the city and, at the same time, our country.

Near Manhattan's Bowling Green, where an angry crowd pulled down a statue of King George III after a reading of the Declaration of Independence, is City Hall Park.

Although New York's present city hall wasn't built until 1811, on or near this site were military barracks, the area's first public school, an arsenal and other utilitarian buildings. In 1776 American fortifications bordered the area and Liberty Poles stood on the grounds. Later in the war, Nathan Hale was believed to have been hung from a tree there, as were other revolutionaries considered by the British to be seditionists.

Today the area is called City Hall Park and on this July Fourth celebration it will be decorated with ageratums and begonias arranged in the patterns and colors of the American flag, thanks in part to the F.W. Woolworth Co., which sponsored the planting.

Nearby is Battery Park, named for the battery of cannon lining the shore. A special planting representing the French and American flags was planted for the 1986 centennial celebration of the Statue of Liberty, which is in clear view. There are 45,000 red, white and blue petunias planted by NYC Parks gardening crews in a 12,000 sq. ft. bed, symbolizing the unity of France and the United States.

In the past year the area was again planted in bold stars and

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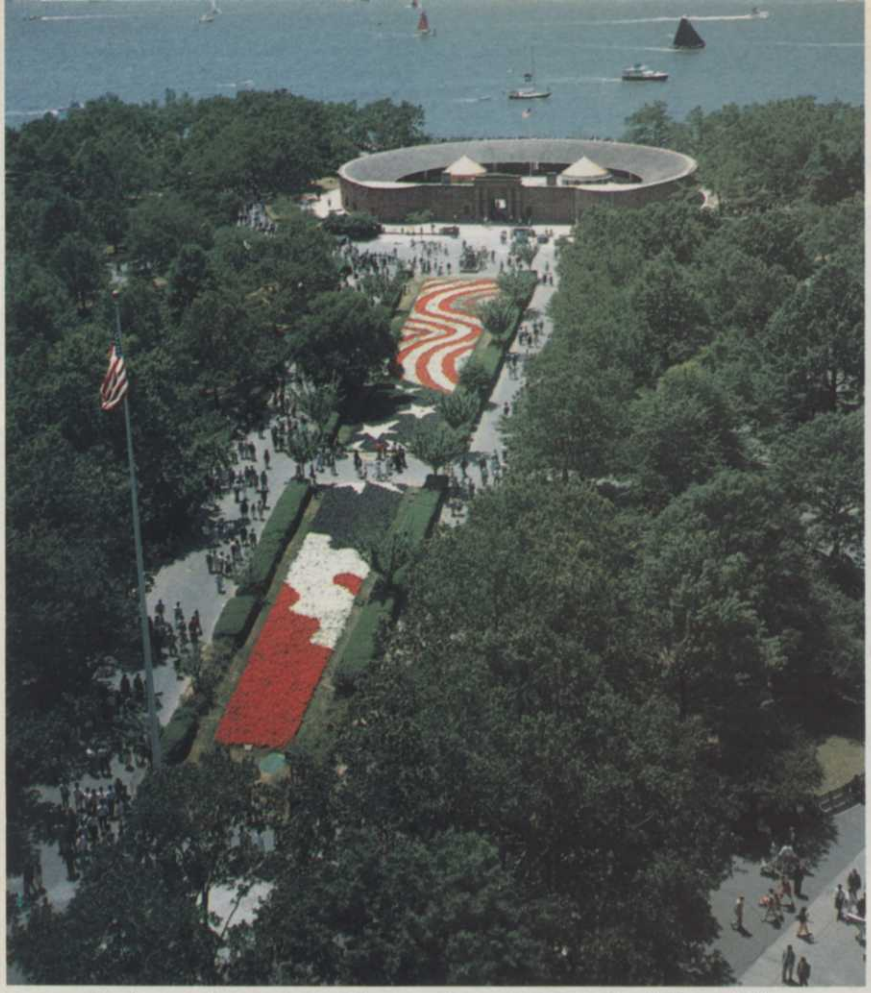


Battery Park was decorated with more than 40,000 red, white and blue petunias for the centennial celebration of the Statue of Liberty, which is in clear view from the park.

Today it's a pleasant park in the heart of Manhattan where one can go to enjoy lunch. But only 200 years ago, City Hall Park was a hotbed of revolution, a site that hosted military barracks and Liberty poles. Ageratums, pansies and begonias planted this year bring the present and past together beautifully.

stripes. Petunias were planted at the rate of 7,000 a day to create a 40,000-flower Betsy Ross flag, and stars made of tulips were also added.

Historic trees

The Parks department also planted groves of 13 trees for each of the 13 original colonies at the site of historic houses in parks around the city. Native black tupelos were planted at Staten Island's Conference House (right), where on Sept. 11, 1776 Benjamin Franklin, John Adams and Edward Rutledge met with British Lord Admiral Richard Howe to negotiate peace (the British admiral offered to end the conflict if the colonies would return to British control. The Americans, of course, turned down Howe's offer).

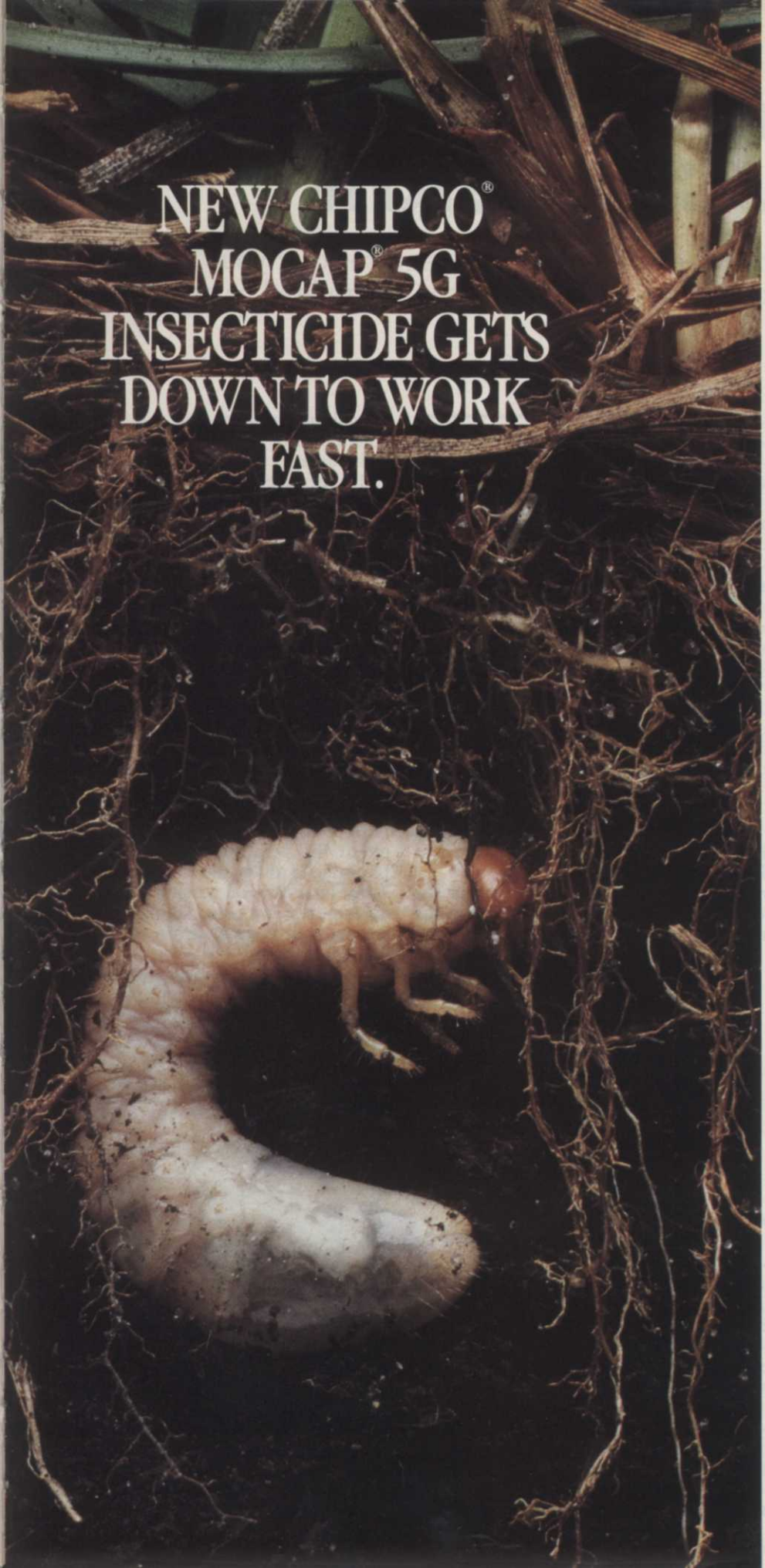
Trees will be used to honor other famous houses, including the Linden trees at Van Cortland Manor in the Bronx, where the British held colonial patriots prisoner.

Historic parks

Franklinia trees were added to Thomas Paine Park in Manhattan, once the front line of battle in the Revolutionary War. Groves of green mountain sugar maples were planted at John Paul Jones Park in Brooklyn and at Rufus King Manor in Queens, the former home of a drafter and signer of the Constitution.

In Central Park's Strawberry Fields, a white pine was planted to commemorate the historic role of the Iriquois Six Nations, whose constitution served as a model for the U.S. Constitution. The Iriquois Six Nations are the oldest continual constitutional government on this continent. The first treaty George Washington signed with another government was with the Iriquois Nations in 1768, when the United States officially recognized Iriquois soverignty. **LM**

At the southernmost tip of Staten Island is the Conference House, the site of a failed attempt to strike peace between the Americans and British in 1776. This year 13 native black tupelos were planted here, one for each of the original colonies.



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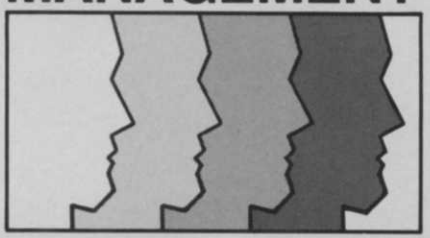
PLANNING FOR SUCCESSION

Continuation of the family business requires that you choose your successor wisely, whether they're related or not.

By E.T. Wandtke

MANAGEMENT



IN BUSINESS

The importance of the family-run business is often overlooked. In the lawn care industry, this issue is starting to surface as a problem for business owners.

Succession and ownership are two problems unique to a family business. It is estimated that more than 13 million of today's family businesses have no plan for succession. In addition, many family businesses close because the impact of estate taxes is never considered when planning for succession.

What may have been adequate tax planning two years ago may now be inadequate after the Tax Reform Act of 1986. Make sure your tax adviser is on top of this issue.

Many don't make it

One in three family businesses fail after being passed onto the second generation. Third-generation family businesses succeed at a rate of less than one in seven. Poor planning is often the cause.

Currently one in three family businesses fail after being passed onto the second generation, statistics say.

Let's assume that one of your children does decide to go into your lawn care business. What is the best way to turn the company over to him or her? You could sell him or her stock, present the company as a gift or provision in your will, or pass it on to your wife first.

The plan of succession is an important component of the overall business plan. This plan requires the input of several outside advisers: a psychologist, a strategist such as AGMA and a tax counselor, usually your CPA. This may seem like an unusual team, but effective business succession requires a combination of talents.

The psychologist can determine if both you and the chosen successor are compatible and agree on the future of the company.

The strategist can determine the future viability of the company in the lawn care industry, and whether the remaining family members believe that there will be a business opportunity in the future.

A tax counselor is needed to develop the necessary financial strategies that will allow the company to pass from one generation to the next. This requires a minimum disruption in operations because of estate taxes.

When the choice is made

You need to find an individual capable of operating your company. Once this individual is on board, his or her training and development should be the same whether he is related or not.

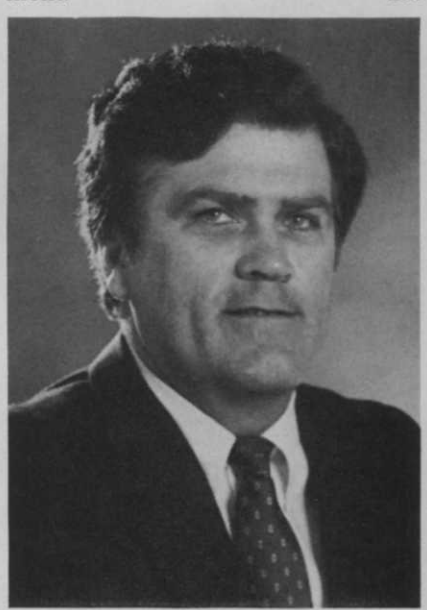
The key issue is preparation. Your successor should possess the needed financial, marketing, operating and managerial sense as would be found in the owner of most successful service companies.

Do not look for a carbon copy of yourself. Choose someone with an understanding of the industry and the role that the owner of the company will be expected to execute. Encourage your successor to gain experience in making decisions and gaining the confidence of fellow employees and customers.

If your successor is not related, you need to develop a tax and financial plan that will effect the transfer of the company to the nonfamily member and provide you with income and security.

These issues need to be discussed with your tax advisor and attorney. If an agreement can not be reached, there are several companies in the industry who will buy your company, but probably for less money than you would have received if it were sold privately to a known buyer.

Passing the business on to a family member or nonrelative requires much planning: tax planning to deal with the impact of estate taxes in the event the principal dies; business planning to anticipate the marketing, sales, financial and compensation requirements; and personal planning to ensure your compensation in retirement. **LM**



Ed Wandtke is a senior consultant with All-Green Management Associates, in Columbus, Ohio. He focuses on operations and financial questions.

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Circle No. 274 on Reader Inquiry Card

Blended vs. homogenous granular fertilizers

by Keith J. Karnok, Ph.D., University of Georgia

In recent years there has been considerable discussion in the turfgrass industry regarding blended granular fertilizers versus homogenous granular fertilizers.

"Blended" describes the formulation process where the major fertilizer components, usually N, P and K, occur in separate particles, which are then mechanically mixed or blended together to form the desired N-P-K ratio.

"Homogenous" describes the formulation process where the N, P and K components are combined to form a single particle. Each particle would therefore contain the desired N-P-K ratio.

The uniformity debate

The point of discussion has centered primarily on the relative uniformity of application of these two basic types of fertilizers. It is believed that particles of blended fertilizers will segregate from one another when delivered from a rotary spreader, resulting in non-uniform fertilization. Conversely, segregation will be avoided by using homogenous fertilizers, thus resulting in uniform coverage.

The above situation is of primary concern when the materials are delivered from a rotary spreader. Rotary spreaders are commonly used by professional turfgrass managers because they afford ease of operation, wide swath, and relatively uniform distribution patterns.

A study was conducted at the University of Georgia in which the particle distribution of several commonly-used turfgrass fertilizers delivered from a rotary spreader was examined.

The study begins

In this study, the Scott's R-X7 rotary spreader was used to deliver the fertilizer materials. The test procedure involved passing the spreader, which contained a specified fertilizer, over a series of specially-designed collection trays. Spreader speed was maintained at approximately three miles per hour.

Seven complete fertilizer materials were tested: three homogenous formulations, two fertilizer/pesticide combination products (BFC) and two blended fertilizers without pesticide (BF).

After passing the spreader over the collection trays, a small sample of fertilizer was taken from each tray for chemical analysis.

In addition to a chemical analysis, a physical analysis was also conducted. The physical analysis consisted of passing the fertilizer material from each collection tray through a series of wire mesh screens ranging from 2.00 to 0.25 mm.

The results of this study showed that with any given fertilizer, larger particles in the 1-2 to > 2 mm size range disperse relatively uniformly across the effective spreader swath. Materials do not accumulate at the perimeter or at the midpoint or center line of the swath.

Small particle dispersion

However, at particle sizes smaller than 1 mm, a much less uniform distri-

PARTICLE SIZE RANGE OF SEVEN GRANULAR FERTILIZERS AND RELATIVE RANKING OF UNIFORMITY OF DELIVERY.

Fertilizer type	Particle Size (mm)				
	<0.25	>0.25–<0.5	>0.5–<1	>1–<2	>2
HF_1	58.2	41.0	0.5	0.2	0.1
BF_2	9.1	64.0	20.1	6.2	0.6
BF_3	28.8	47.9	19.6	2.9	0.8
HFC_4	0.7	26.6	52.6	15.6	4.5
HFC_5	4.2	42.8	40.2	10.4	2.4
BFC_6	15.0	36.0	34.0	11.0	4.0
BFC_7	11.0	57.0	22.0	8.0	2.0

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Roy Peterman

Entry forms are now being accepted by the Professional Grounds Management Society and LANDSCAPE MANAGEMENT magazine for their third annual "Landscape Manager of the Year" award.

The purpose of the award is to recognize superior job performance among landscape managers, to challenge those involved in the industry, to achieve higher standards of excellence and to bring national recognition to deserving managers.

Any person directly responsible for the professional maintenance of one or more landscapes is eligible to enter. Applicants will be judged according to job performance, honors and awards, procedures and philosophies, and contributions to the green industry. Applicants will be asked, at the time of entry, to submit four 5 x 7 black-and-white glossy photos and 10 color 35mm slides of current work areas with a short narrative on each.

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Applicant's company

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bution occurred. These smaller particles showed greatest accumulation near the center of the spreader swath. Therefore, particle size of a fertilizer may help explain why some of the fertilizers examined in this study showed relatively non-uniform delivery.

To better understand this relationship, the particle size range of each material was determined (see table). In general, those fertilizers that spread the most uniformly also showed the smallest range in particle size. However, it is important to note that not all the blended fertilizers had non-uniform delivery. For example, BF2 was quite uniform; in fact, it was comparable to HF1. More than 84 percent of fertilizer fell in two size ranges (1-2 to > 2 mm). This explains its overall relatively uniform delivery. Only HF1, which had a narrower particle size range, showed slightly more uniformity.

N remains even

Although some fertilizers had non-uniform delivery, it was often difficult to observe growth or color variation in areas fertilized with these materials.

There may be several reasons for this. Our data showed that of the three nutrients, nitrogen exhibited the least variation across the spreader swath.

Of the three nutrients, turfgrasses exhibit the most dramatic growth and color response to nitrogen in either excess or deficient amounts. Therefore, since nitrogen showed relatively good distribution across the spreader swath, it would be rare to see growth or color variations in the field when using any of the materials tested in this study.

Our results did show phosphorus and potassium as having more variation in distribution than nitrogen. However, neither one of these nutrients in excess or deficient amounts would be expected to cause an obvious growth or color response in turfgrasses. Therefore, non-uniform delivery of these nutrients over a turfgrass area would be difficult to detect.

In conclusion, in terms of uniformity of application, is there a real difference between homogenous and blended granular fertilizers? Our study showed that there can be. However, when considering uniformity of fertilizer dispersion from a rotary spreader, a uniform or narrow particle size range is more important than whether the fertilizer is blended or homogenous.

In general, our study showed that the more uniform the particle size for a particular fertilizer, the more uniform was its delivery from a rotary spreader, regardless of whether it was homogenous or blended.

Label is no help

Finally, it should be noted that information pertaining to the particle size of a fertilizer is not usually included on the product label. However, consider the other factors that are just as important when determining the potential effectiveness of a particular fertilizer.

Two important considerations would be the N, P and K analysis and the specific nitrogen carrier. Some important characteristics of the nitrogen carrier include: rate of N release, burn potential, acidifying effects, water solubility and cost per unit of N. In addition, keep in mind that the condition of the spreader, calibration, operation and terrain may also cause variation in the uniformity of fertilizer delivery.

If the wrong fertilizer is selected in regard to analysis and/or nitrogen carrier, and/or particular attention is not paid to the care of the spreader and the spreader's operation, it will probably make little difference whether the fertilizer material is homogenous or blended. **LM**

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LM

Growing sod over plastic: turf in five weeks

by Henry F. Decker, Ph.D., Ohio Wesleyan University

Interest in growing grasses in various media over plastic sheeting has grown recently.

Turf grown by O.M. Scott & Sons in 1965 proved that, given appropriate care, you can maintain a grass sod on concrete or any impermeable base as long as you have sufficient water and nutrients.

The basic idea is compelling: by placing a suitable growing medium and seed over plastic sheeting (in our case, 1- to 6-mm polyethylene sheeting), and irrigating it carefully, a tall fescue sod, for example, can be formed in as little as five weeks. The entire primary root system remains intact: unable to penetrate the plastic sheeting, the roots run laterally. They rapidly form a fibrous root mass that binds and knits the sod so that it can be harvested and handled in just a few weeks rather than the typical one to two years.

The new sod can be harvested by simply rolling it off the polyethylene sheeting which is left in place to be used again for subsequent sod crops. Since the sod is harvested with the root system intact, rather than being severed by a sod cutter, the sod binds and roots rapidly to a new site.

The availability of composted sludge and the arrival of tall fescues make the concept of growing sod over an impermeable base more feasible.

Good news, bad news

There are several other significant advantages to the process:

- Since the sod is grown in only a few weeks, much less water, fertilizer, and mowing are needed.
- Depending on the growing medium, the sod can be produced lighter than even a peat sod.
- The sod can be harvested and laid in large rolls (5 by 45 feet to give sod rolls of 25 square yards or more) which can eliminate a great deal of manual labor.

Despite the obvious advantages, several difficult problems have been encountered. First has been the availability of a plentiful, inexpensive, growing medium. Hundreds of materials appear to work in a greenhouse only to be quickly eliminated when considered on a field scale.

Second, the amount of growing material required to cover an acre sheet of plastic one inch deep translates into more than 130 cubic yards. That is too many dump truck loads to be competitive with the conventional sod on soil process.

Third, placing an exact amount of growing material in a thin layer evenly over acres of plastic film without distortion is a challenge. Rainfall — whether it be a drizzle or a downpour — compounds the problem.

Conventional sodding is very labor intensive. Significantly reducing the amount of hard labor involved has to be a prime attribute of any alternative sodding system.

Positive developments

Starting in the 1980s, several things helped make an alternative sodding system more feasible:

- The Beltsville system of composting sewage sludge began to catch on. Suddenly, at least in Ohio, an inexpensive growing material became available that is charged naturally with the right nutrients for grass culture.
- Techniques were developed to spread the growing medium evenly, to protect it from distortion in thunderstorms, and to reduce the quantity required to affect a sod.
- Turf-type tall fescues have been introduced. These new turf cultivars have several apparent advantages over bluegrass: they are more drought tolerant, possibly more shade tolerant, disease- and insect-resistant. They are more durable on playing fields, germinate and root more quickly and are more vigorous than bluegrass.

On the other hand, the tall fescues do not produce rhizomes and stolons. Hence, they do not lend themselves easily to conventional sod production. In practice, these drawbacks are compensated for by growing the sod for a longer than usual period, by including sod netting, and/or by adding bluegrass to the tall fescue seeding.

Thanks, tall fescue

These apparent disadvantages to growing a tall fescue sod in a conventional manner turn out to be strengths when tall fescue is considered as the main ingredient of an alternative sod grown on a solid base. The vigorous and rapid primary rooting gives the tall fescue cultivars a distinct advantage over the less vigorous bluegrasses.

With sod netting, we can easily grow in five weeks a bona fide tall fescue sod that expert grass men judge to be of comparable, even better, quality than conventional, soil-grown tall fescue sod.

In 1988 experiments supported by the National Science Foundation, we tested four different readily-available waste materials: composted sewage sludges from Columbus ("Com-Til") and from Akron ("Organix"); a spent mushroom soil from the Campbell Soup mushroom production facility in Jackson, Ohio; and composted feed lot waste from stockyards in South Charleston, Ohio.

Controls consisted of a typical Ohio clay loam field soil and a mix of one-half field soil and one-half Com-Til. These were tested simultaneously in irrigated, 2,000 square foot test beds and in greenhouse pots at Ohio Wesleyan University. Selected turf cultivars were the bluegrasses Midnight, Adelphi, Banff, Mo-

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nopoly, America, and Nassau; and the tall fescues Jaguar and Rebel II.

Good results

The tall fescues reached an average height of 27 cm four weeks after planting on the waste materials as on the controls. They grew at least twice as fast as the bluegrasses on all waste materials. The bluegrasses averaged heights of 15 cm on the controls, 11 cm on the composted sludges and feed lot wastes, and only 6 cm in four weeks on the mushroom soil.

The sewage sludges had to be "leached out" prior to seed germination with the seedling root growth proportional to the amount of leaching. In the field this translated into intense irrigation (four inches of water per week) for the first two weeks of planting.

Despite a record drought over the 1988 summer, we were able to prove conclusively that it was possible to substitute waste materials for topsoil and to produce consistently high quality tall fescue sods in short periods.

With certain pre-conditions, it would not be unreasonable to assume that a perfectly serviceable tall fescue sod could be produced in as little as a month.

Saving time, space

Surprisingly, because of the drought, after the first two weeks of initial growth the tall fescue sods grown on plastic needed less water to maintain in prime condition than our conventional bluegrass sods on soil. And acceptable tall fescue sods were being produced with as little as 20 cubic yards of waste material per acre. The optimum was in the range of 40 to 50 cubic yards per acre. No pesticides or adjuvants were needed.

Bluegrass sods are much more difficult to produce than tall fescue sods. (A hot summer on plastic is probably asking too much of bluegrasses.)

In 1989 summer experiments, we hope to be able to study the effects on bluegrass seedings of intermittent, cool, deep, well water and to look for bluegrass cultivars that have greater drought tolerance and other favorable characteristics.

Smart waste disposal

Another attractive feature of this innovative growing process is its broad application on a national scale. Since the growing medium is contrived or constructed from waste materials—such as composted sewage sludge—substantial amounts of topsoil would be saved. And an obviously troublesome, ever-expanding waste material would be handled effectively, efficiently, and disposed of safely.

It has been estimated that only five percent of the U.S. annual cultivated sod production (estimated at 250,000 acres a year) devoted to this growing process using sewage sludge as the main ingredient of the growing mix in place of topsoil, production would be the equivalent of using the total dry sludge production of Boston, New York, Philadelphia, Washington, and Chicago combined.

When the capacity of the new sod growing system to produce four to eight crops per year is factored in, then it can be calculated that only about 1,500 to 3,000 acres of growing surface would be needed for all of these cities.

If the technology of the earlier research can be refined and adapted to cost effective production on a large scale then an entirely new avenue of resource recovery will be introduced into the handling and disposition of otherwise troublesome waste materials. In addition, a better and more economical method of growing grass sods, which also conserves topsoil, will be introduced. **LM**

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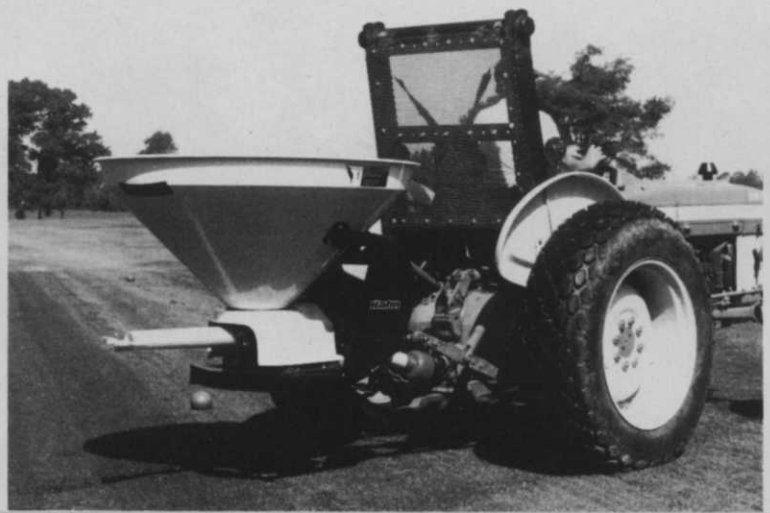

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But, many people are not aware of that. Perhaps we are the most overlooked turfgrass in existence.

We feel that Fine Fescues are the best turf investment a grounds manager can make. And, we'd like to point out *why.*

Fine Fescues are *real* grass. And, as with all living things, there is give and take. Sure, our Fescues take water and some maintenance, but they are better *givers.* Our natural grass turns noxious gases into oxygen and is a natural air conditioner for turf users.

We feel that while artificial turf has its place on locker room floors, it has no business where *real* people work, play and relax. Our grass is just *naturally* more refreshing.

Our Chewings (Festuca rubra commutata) and creeping red (Festuca rubra rubra) Fescues are rather unique when compared with other turfgrass species. Although they have most of the features of other cool season grasses, Fescues have several distinct benefits worth noting.

Fine Fescues are low maintenance. Our varieties require less fertilizer and water than other species. That's a big *plus* at today's water, fertilizer and manpower prices.

Fine Fescues fare well around trees. It seems our grass doesn't need as much sunlight, water and nutrients as other turfgrass species. Because Fescues don't compete with trees for these important elements, they're called *shade grass.* Our Fescues don't creep into flower beds, nor crowd out other species in a mixture.

And, because they're Oregon grown, our Fescues germinate, adapt and perform better than imported types.

You'd expect to pay a fortune for such a turfgrass, but Fescues are quite reasonable

Why don't Fescues cost a great deal? Fine Fescues have been around a long time and have been changed very little. Why mess with a good thing? While other former "pasture" species are coming closer to looking like our old standard; receiving notoriety for their "improvements" and enjoy the price increases associated with the word "new," our Fescues have continued what they do best . . . support the up-and-comers. But then, Fine Fescues were meant to be stepped on.

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Not only do Fine Fescues excel alone or in perennial ryegrass/Kentucky bluegrass mixtures on horizontal playing surfaces; Fescues are excellent for low maintenance areas like berms, roadside banks, ski slopes and hilly spots that don't retain moisture. So, you see, Fescues are ideal all-around grasses for *all around* your recreation and sports facility. Their low maintenance requirements offer *turf managers* a chance for a little more leisure . . . and there's nothing wrong with that.

For a series of nine tech sheets on Oregon grown Chewings and creeping red Fescues, call or write:

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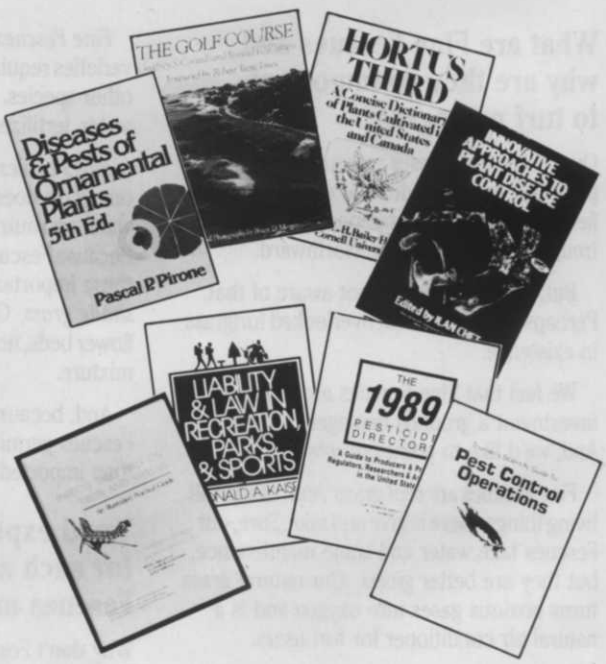
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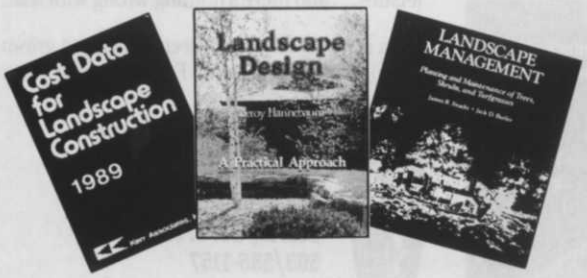

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370 - LANDSCAPE OPERATIONS: MANAGEMENT, METHODS & MATERIALS
by Leroy Hannebaum
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by Edward C. Martin
An annotated photographic guide to the design qualities of ornamental plants and their aesthetic and functional use in landscape designing. Over 600 trees, shrubs, vines, ground covers and turfgrasses are described in nontechnical language. Over 1900 photographs. Provides a basis for selecting the best plant materials for any particular use in landscape design. Contains detailed indexes that provide quick reference to particular design qualities and growing conditions. **$58.95**

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An excellent reference for individuals involved in the design and development of plantings and constructed features for residential sites. Illustrations and actual residential case study examples are used to communicate graphic, planning and design concepts which are the focus of this text. **$43.00**

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by Richard W. Harris
Provides comprehensive coverage of complete planting, site analysis, preparation and special planting methods, fully detailed coverage of fertilization, irrigation and pruning guidelines on preventative maintenance, repair and chemical control, how-tos of diagnosing plant problems, practical data on non-infectious disorders, diseases, insects and related pests and pest management. **$56.00**

400 - NATIVE TREES, SHRUBS, AND VINES FOR URBAN AND RURAL AMERICA
by Gary L. Hightshoe
This award-winning reference to native U.S. plants has now been expanded to include shrubs and vines. Over 250 major species are characterized by form, branching pattern, foliage, flower, fruits, habitat, soil, hardiness, susceptibility, urban tolerance and associate species. Includes unique color-coded keys that classify plant species by visual characteristics, cultural requirements and ecological relationships. **$79.95**

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by George Symonds
Pictorial key to identify shrubs. Contains more than 3,500 illustrations to check specimens. Popular and botanical names are given for each shrub and handy index tabs for quick reference.
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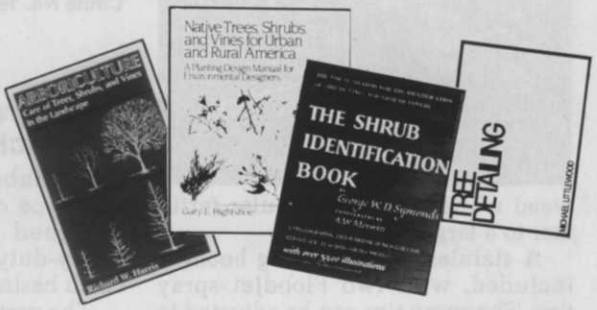
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Native Trees, Shrubs and Vines for Urban and Rural America
THE SHRUB IDENTIFICATION BOOK
TREE DETAILING

755 - TREE DETAILING
by Michael Littlewood
A compendium of practical information on all aspects of tree planting and maintenance. 10 chapters deal with tree stock and sizes, planting techniques, pruning and surgery, protection of new trees and existing trees, maintenance and management, survey and evaluation. **$32.95**

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by Pascal Pirone
The fourth edition of this guide for anyone involved in the care and treatment of trees. Special sections on tree abnormalities, diagnosing tree troubles, non-parasitic injuries and assessing the suitability of different trees. **$49.50**

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by George Symonds
Pictorial reference to identifying trees by checking leaves, buds, branches, fruit and bark. Like its sister publication, SHRUB IDENTIFICATION, popular and botanical names are listed with index tabs for easy reference.
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by Partyka, Joyner, Rimelspach, Carver
Illustrates plant identification characteristics. Organized in two basic sections: plant identification and plant disorders, this text utilizes 430 color photos, 430 line drawings and 45 black and white photos to simplify identification.
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"How-to" video featuring step-by-step guidelines for installing sod professionally. Illustrated reference guides and group study materials included.

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Award-winning infield demonstration video covers the key steps of planting landscape trees. Illustrated reference guides and group study materials included.

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Shares those "tricks of the trade" used by national award-winning professionals. Shows how to select, install and maintain bedding plants successfully. Illustrated reference guides and group training materials included.

04 - WORKING WITH PESTICIDES - 2 45 minute videos - Color - VHS - $143.95
This video safety course covers Pesticide Labels, In-field Clothing & Equipment, How to Be Prepared for a Spill, Tips on Mixing and Calibrating Pesticides and more.

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Examines nine major warm and cool season turf varieties. Optimum mowing heights and cutting frequency are given each turf variety. Illustrated reference guides and review test included.

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Step-by-step instructional video for infield employees covering Sprinkler Heads/Drip Emitters, Electrical/Manual Valves, Backflow Prevention Devices, Controller Operation and more. Illustrated handbook included.

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PRODUCTS

Spot spray liquids with electric unit

Lesco, Inc. has introduced a new electric-powered sprayer kit designed to fit the Lesco Standard or Hi-Wheel Spreader. The Spreader Sprayer spot sprays liquid products while the spreader is used to apply granular products. According to Lesco, this allows spraying on isolated broadleaf

weed while applying granular fertilizer to a large turf area.

A stainless steel, folding boom is included, with two FloodJet spray tips. The spray tips can be adjusted to spray product over the same area as the granular product pattern. A three-gallon polyethylene solution tank and a fully charged battery provide seven hours of continuous spraying. Battery charger included.

Circle No. 190 on Reader Inquiry Card

Greenhouse sprayer high pressured

The "Mini Pro Care" series greenhouse sprayer from Agrotec is designed for nursery and greenhouse operators applying a wide range of pesticides, fertilizers and plant hormones.

Each sprayer is equipped with a 4.4 gallon/minute diaphragm pump that delivers 275 pounds of pressure, for mid-sized tree spraying or reaching distant corners of nursery beds and greenhouse benches. The handgun kit features a high-reach, pistol-type grip with adjustable spray patterns. A

wide range of optional adapters and extensions are also available.

Constructed of linear polyethylene, the 30-gallon tank incorporates ultraviolet absorbers to prevent sunlight deterioration. The tank has a cut-off valve, easy-to-clean line strainer with stainless screen, drain plug for easy cleaning, a threaded fill-well that provides a tight seal and an anti-splash lid for easy filling and cleaning.

The Mini-Care Series comes with a 3 hp Briggs & Stratton engine and positive hydraulic-jet agitation on the basic skid model.

Circle No. 191 on Reader Inquiry Card

Steel grating for catch basins

Seidelhuber Metal Products has a new type of galvanized steel grating designed to provide permanent, heavy-duty covering for golf course catch basins and drain inlets.

The grating is designed to provide optimum drainage while catching leaves and other debris on the surface for easy clean up.

In addition, the company says the

grate reduces maintenance costs and helps prevent accidents to players and course personnel caused by poorly enclosed basins and inlets.

Circle No. 192 on Reader Inquiry Card

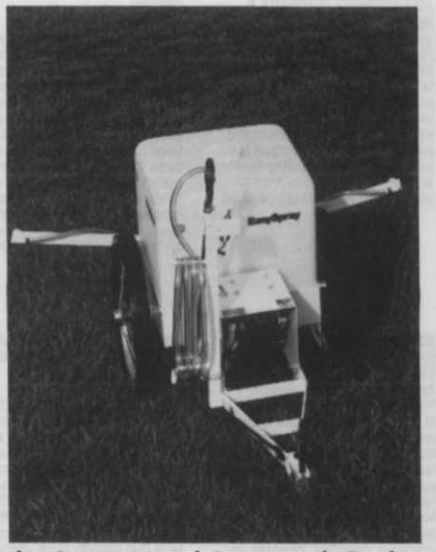
Look for spray unit at Louisville Expo

A new, trail-type unit for spraying liquid pesticides, herbicides and fertilizers will soon be available from Easy Rake of Lebanon, Ind.

The Model 84 features a 13-gallon plastic spray tank. Maximum pressure is 50 psi, powered by a 12-volt electrical system.

An adjustable spray boom on the rear of the trailer can be locked in a raised or lowered position. Spray swath is 6½ feet. A hand spray wand is also available, with a 12-foot long hose to spray up to 25 feet.

The Model 84 sprayer will debut at



the International Lawn and Garden Equipment Expo in Louisville, July 31-August 2.

Circle No. 193 on Reader Inquiry Card

New vacuum/blower compact, heavy duty

The HDV-370/IC is a new vacuum/blower from Lambert Corp.

This product is powered by a 5-hp Briggs & Stratton engine. The heavy-duty steel impeller handles all types of litter and debris, and is totally out of reach when the unit is operating.

A 3½" x 30" nozzle allows easy pickup of debris and extends beyond

the right wheel to clean up to fences or raised structures. Single lever height adjustment offers settings from ½" to 4".

The bag holds 8.4 cubic feet and is made of a filtering material. All dust is contained within the bag.

Circle No. 194 on Reader Inquiry Card

continued on page 76

Meet your new source of extra-service income.

LESCO
Nu-Mulch™
Restores Color to Old Mulch
Keep Out of Reach of Children
CAUTION
Read All Directions Before Using
PRECAUTIONARY STATEMENTS
This product may cause eye irritation. Prolonged contact with skin can also cause irritation. In case of accidental eye contact, flush eyes with water. Wash exposed skin areas with soap and water. If irritation persists, obtain medical attention.
DIRECTIONS FOR USE
LESCO Nu-Mulch concentrate is a combination of ingredients to be mixed in a spray tank for application on fibrous wooden mulching material. LESCO Nu-Mulch is inert, water-soluble and disperses rapidly in agitated tanks.
Recommended Applications on Mulch:
Add LESCO Nu-Mulch concentrate to the spray tank at a rate of 3.0 to 4.0 fl. oz. per gallon of spray material. One gallon of spray will cover 150 to 300 sq. ft., depending upon compaction or fluffiness of the mulch and color desired.
The lower rate can be used when only a lighter color is preferred. For darker color, spray at the heavy rate and higher spray volume per sq. ft. Application technique is important. In order to obtain complete coverage, it may be necessary to spray one light rate first and follow with another light rate applied perpendicular to the first (criss-cross pattern). Finer droplets will improve coverage. An 8002E spray tip is ideal for application. Apply as needed throughout the year.
Manufactured for:
LESCO, Inc.
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Net 64 Fl. oz.
#016030

Old faded mulch becomes new profitable business with LESCO Nu-Mulch.™ It's the new colorant that quickly and easily restores original color to mulch.

One application lasts two to three months and costs about half as much as putting down new material. And LESCO Nu-Mulch is an easy-to-use liquid that is applied with a backpack or handheld sprayer. No bags, no bulk.

Non-toxic to plants, LESCO Nu-Mulch is an inert, water-soluble formulation that easily washes off most types of foliage. It'll put you in the mulch business all season long.

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LESCO

LESCO, Inc., 20005 Lake Road, Rocky River, OH 44116
(216) 333-9250

Always read and follow label instructions before applying any chemical product.

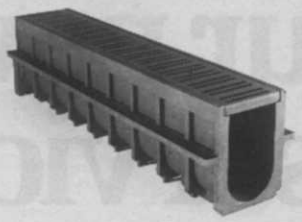
Circle No. 126 on Reader Inquiry Card

Drainage system made from recycled plastic

InnoPlast, a chemical-resistant, polyethylene-based recycled plastic material is being used to manufacture InnoDrain, a new trench drainage system from Innovative Plastics Products, Inc.

IPPI says the system is durable, lightweight and economical compared to other systems on the market.

InnoDrain is a neutral-sloped system with an interlocking design and modular ribbing in 4″ increments for an exact fit. Dual oval outlets at each



end accommodate 4″ or 6″ pipe. Standard overall depth is 9¾ inches and the inside top width is five inches.

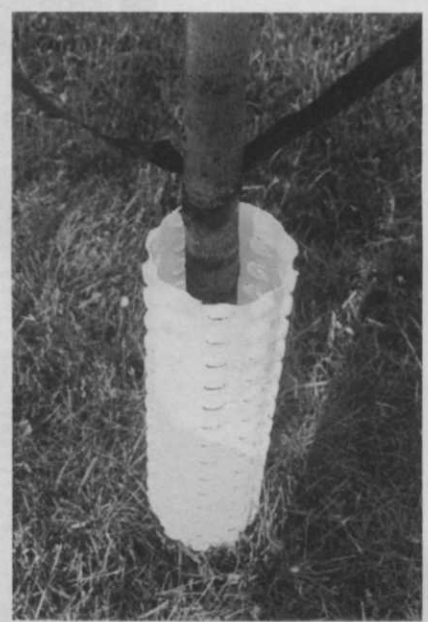
InnoDrain is available in standard 36″ lengths with gratings for all applications from light pedestrian traffic to heavy duty vehicular traffic.

Circle No. 195 on Reader Inquiry Card

Tree guards work wonders

Tree-Gards are plastic sheets that wrap loosely around the bark of young trees to protect them from temperature fluctuation during the late winter and early spring months. The guards stand from 12 to 36 inches, and T & G Products, Inc. says they ward off unwanted animals, such as rabbits and mice that can feed on tree bark. They also help prevent southwest blight during the late winter/early spring freeze and thaw cycle.

Tree-Gard is white, so it reflects the sunlight and prevents the bark from thawing during the day.



Circle No. 196 on Reader Inquiry Card

Fertilizer injector made for smaller companies

The Pro-jector automatic proportioning fertilizer injector is now available in a five-gallon model. The new size was developed because of the popularity of the quart and one gallon units, and because of the demand by small agricultural and other commercial users.

TFS Systems says the Pro-jector was designed for those users who need to proportionately control the amount of fertilizer or other liquid additives being distributed through the irrigation system. The five-gallon model features a multi-tank design in which existing water pressure forces

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Water Soluble Plant Food Product Line for Intensive Crop Production and Advanced Application Methods.

- **Potassium Nitrate Fertilizer,** fully water soluble.
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Ph #212-586-0101 Fax: 212-586-2332

Circle No. 121 on Reader Inquiry Card

Brouwer™
the "best buy" in transportable reel mowers.

Dollar for dollar, feature for feature...no competition.

Available as 5-gang or 7-gang units and as a Fairway Model for that extra fine quality cut and lightweight mowing demanded on fairways.

The standard mower is ideal for the roughs on golf courses, with its easy "quick height of cut" adjusters, and also for parks, recreation fields, school boards, municipalities and turf growers.

Hydraulic or manual lift for easy transport or storage.

Brouwer™ mowers offer outstanding value and important features:

- **Proven positive "no slippage" drive, with no heavy wheels, gears or expensive hydraulic components.**
- **Low horsepower requirements**
- **Lightweight, but strong, means less compaction**
- **Rough and fine cut models**
- **Economical and easy to service and maintain**
- **Proven superior performance in varied types of grass and conditions especially in the wet**

Options include:

- **4, 5, 6, 7 or 8 bladed reels**
- **Track removal brushes**
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For more information call your Brouwer™ dealer...TODAY.

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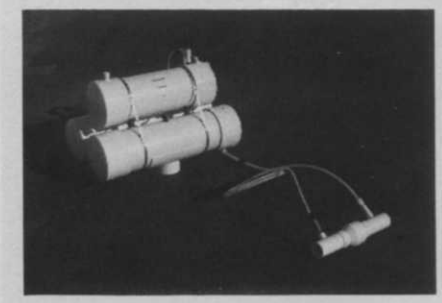
Circle No. 106 on Reader Inquiry Card

air in the bottom tanks to compress, causing the fertilizer in the top tank to be injected into the system.

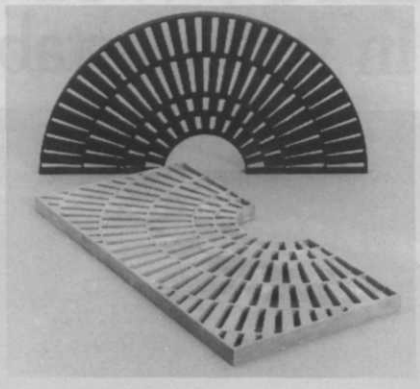
A big advantage, according to TFS, is that the Pro-jector causes less than two pounds of pressure loss to the irrigation system.



Circle No. 197 on Reader Inquiry Card

Plastic tree grate offers advantages

The Tree Grate is ideal for use with decks, patios and atriums. Lightweight and easy to clean, the Tree Grate will not corrode or disfigure. It's covered by a five-year guarantee, and cannot be harmed by plant disease, rot or mildew. An ultraviolet inhibitor preserves color and prevents deterioration.



Circle No. 198 on Reader Inquiry Card

Test results released for liquid fertilizer

Hallier Enterprises of Vermillion, Kan. has made available test results from the University of Arkansas Division of Agriculture on Bioform FPH 8-8-8.

Bioform is a fish protein hydrolysate blended with additional primary plant food nutrients and water soluble seaweed extracts. It is formulated for use directly on the seed or for dilution with water for use in transplanting, in row placement or foliar fertilization application.

Hallier Enterprises says Bioform FPH 8-8-8 may be used on houseplants, vegetable and flower gardens, horticultural and nursery plants and on commercial crops.

Trial samples are available.

Circle No. 199 on Reader Inquiry Card

Sales Managers and Sales Representatives

Tru Green Corporation, America's fastest growing grounds care service company is seeking to fill the positions of Commercial Sales Representatives and Commercial Sales Managers in several major market areas.

SALES REPRESENTATIVE

A college degree is preferred with a minimum of 2 to 3 years of solid sales and marketing experience. Service or grounds care industry background is a plus and must be able to substantiate a consistent track record of success in sales goal achievements.

The successful candidate must possess excellent communication and field organizational skills and be able to work in a team building environment.

DISTRICT SALES MANAGER

A college degree is required and must have 2 to 3 years of management experience in supervising field sales personnel. Grounds care or service industry background is a plus and must be able to substantiate a consistent track record of success in profit and sales goal achievement.

Responsibilities for this key management position encompass sales training and motivation, profit and loss, marketing, and operations team building.

This position offers a competitive base salary and the opportunity to participate in a performance based incentive plan. A comprehensive benefits package is also offered.

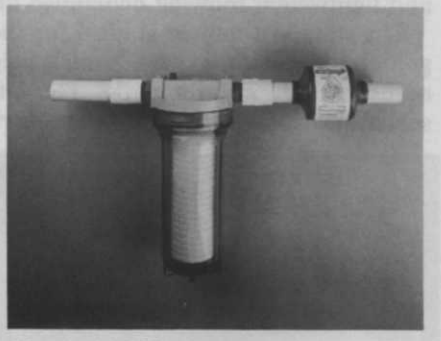
Please send resume and salary requirements to:
Mr. William C. Johnson, Director of Sales
Tru Green Corporation
1111 Alderman Drive / Bldg. 200, Suite 275 / Alpharetta, GA 30201

TRU GREEN®

Circle No. 155 on Reader Inquiry Card

Keep sprayers clean with scale inhibitor

Aqua-Flo, Inc. of Baltimore has introduced a non-chemical means of preventing scale build-up on spray fogger nozzles. It's designed for pipe sizes 1/4" to 4" and flow rates of .10 gpm to 400 gpm.



Additional non-chemical treatment is available to control iron stains and biological contamination.

Circle No. 200 on Reader Inquiry Card

Full-color catalog for indoors/outdoors

A 32-page catalog from Garon Products of Wall, N.J., offers a full line of indoor and outdoor maintenance products. De-icers, instant concrete

Give grubs an inch and they'll take a whole yard.

Grubs feed at many levels in a yard, but it's at 1" to 1½" below the surface where they do their real damage. And because grubs are constantly moving from one level in the soil to the next, a single treatment of most insecticides will only get the ones closest to the surface.

But with OFTANOL® insecticide, you have the strength to knock out those grubs closest to the surface now, and the staying power to deal with grubs, rising up from the depths, in the future.

So take away that inch. And keep the whole yard.

Oftanol.

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Specialty Products Group
Box 4913, Kansas City, MO 64120

Circle No. 134 on Reader Inquiry Card

and pavement repair products, anti-skid coatings, roof coatings, weed killers, caulks, sealants and cleaners. Also included are electronic products, energy-saving devices and safety and material handling equipment.

Circle No. 201 on Reader Inquiry Card

Control white grubs and surface feeders

Lebanon Total Turf Care's Insect Control with Sevin 7G is produced for use on lawns, parks, golf courses and other professionally maintained turf areas.

Lebanon says the product provides economical, safe and dependable control of common white grubs and a broad range of surface-feeding insects. It is also said to be effective against nuisance pests when applied near buildings and patios.

This is a granular control product. It prevents damage to turfgrasses as well as trees, shrubs and ornamentals. According to Lebanon, when used as directed, it provides effective control of turfgrass pests, including white grubs, armyworms, chinch bugs, cutworms, earwigs, grasshoppers and ticks.

A 20-pound bag provides coverage of up to 10,000 square feet.

Circle No. 202 on Reader Inquiry Card

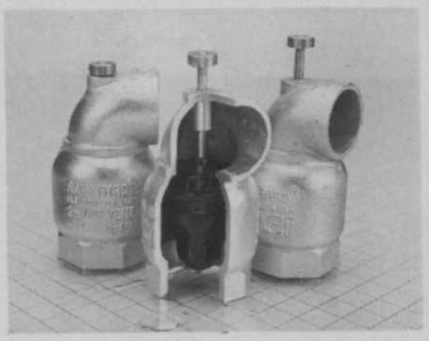
Vacuum relief valve improves air flow

Rain Bird Sprinkler Manufacturing Corporation has developed the RB 2AV Air Vent/Vacuum Relief Valve for use in the green industry.

The Air Vent features a patented, aerodynamically designed, pear-shaped float. The float is designed so that it helps reduce drag, allow higher air flow rates and resist premature closing.

When the valve is set in the closed position, the elastomer gasket seals against a precision machined seat, thereby providing a tight seal at very low pressures.

The valve has a pop-up stem that is easily visible, showing the the float's



position and valve operating mode.

Rain Bird reports that the Air Vent/Vacuum Relief Valve is pressure rated at 2-150 psi, with a 2-inch FNPT inlet.

Circle No. 203 on Reader Inquiry Card

Handle the rough stuff with Brouwer forklifts

New Brouwer rough terrain forklifts feature 5000-8000 lbs. capacities and 12-21 ft. masts.

The lifts are described as compact, light and rugged with tight turning radii for exceptional maneuverability.

A shuttle/torque converter features "on-the-move" shifting.

Circle No. 204 on Reader Inquiry Card

Flowable Morestan gets EPA go-ahead

The Environmental Protection Agency has accepted for registration Mobay Company's new flowable formulation of Morestan 4 ornamental miticide for use on flowers, shrubs and trees. It is free of harmful solvents.

Mobay sources add that the smaller particle size in the flowable product allows for more thorough distribution on the leaf surface, thus offering better coverage and better control.

Morestan 4 is available in quart sizes with "Caution" label. It is not available in California.

Circle No. 205 on Reader Inquiry Card

Heavy-duty steel grating is a permanent covering

Seidelhuber Metal Products, Inc., has made available a new type of galvinized steel grating designed to provide a permanent, heavy duty covering for golf course catch basins and drain inlets.

The grating is designed to provide optimum drainage while catching leaves and other debris on the surface for easy clean-up.

The grating is available in spans to 5 feet and it supports golf carts, mowers and ground maintenance vehicles.

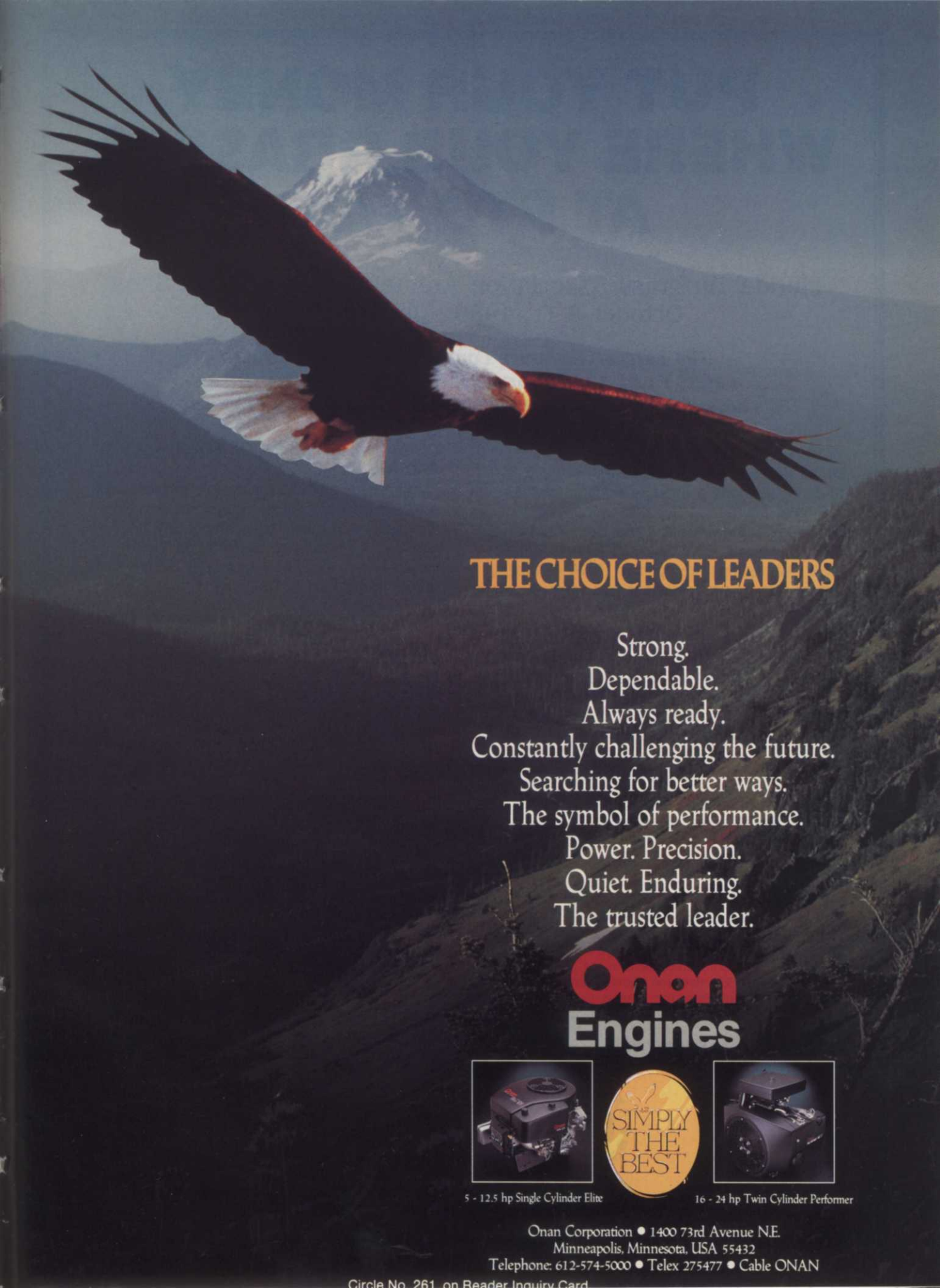
Circle No. 206 on Reader Inquiry Card

Pulverize aerator plugs the easy way

The Olathe Model 56 Plug Pulverizer out-front attachment for the Toro Groundsmaster 300 series helps pulverize and topdress after aeration.

Features include PTO-power, 70 rubber fingers, 34 blades and a 5-ft. swath. Only the rubber fingers will come in contact with the ground, not destructive steel hammer blades common to other grinders, Olathe notes. The plugs are lifted off the turf and battered against the frame before passing by stationary cutters and through a screen to pulverize in one pass.

Circle No. 207 on Reader Inquiry Card



Circle No. 261 on Reader Inquiry Card

PUT YOUR MONEY WHERE YOUR GRA$$ IS AT FTGA '89

Florida Turfgrass Association Annual Conference and Show
October 8-11, 1989 • Tampa, Florida

The Largest Turfgrass Conference in the Southeast
Latest Facts About Warm-Season Turf • Industry Trends
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SEVEN NEW WORKSHOPS!
Broad range of topics make these popular, in-depth sessions a must – Aquatic Weeds, Electrical Equipment Repairs, Disease, Nematodes, and Insects, Landscape Plants, Labor Relations, even Personal Money Management. Workshops are open to FTGA members, but be sure to pre-register if you want to attend!

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OUTSTANDING SHOW OF EQUIPMENT & PRODUCTS
Hundreds of manufacturers and suppliers will be there with the latest equipment, fertilizer, chemicals and more! Open every day with free admission Wednesday. So bring *all* your employees (and don't forget your Greens committee and Board of Directors!)

It's going to be another great conference and show – don't miss it! Mark your calendar now and call for registration details.

CONFERENCE AND SHOW HIGHLIGHTS

LARGEST TURF SHOW IN THE SOUTHEAST
3 Days – Free Admission Wednesday
Over 200 exhibitors from across the U.S.
Latest equipment, supplies, services
Silent Auction

7 WORKSHOPS
Aquatic Weed Control for Turf Professionals
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Principles of Turfgrass Management
Lawn and Commercial Turf
Basics of Turf Management

SOCIAL EVENTS
Golf Tournament
Toro - Wesco - Zaun - Hector - Corn Boil
Bill Wagner Memorial Prayer Breakfast
President's Reception (for members)
Spouse Program

FLORIDA TURF GRASS ASSOCIATION

Florida Turfgrass Association
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Orlando, Florida 32803

For registration and schedules call 407-898-6721

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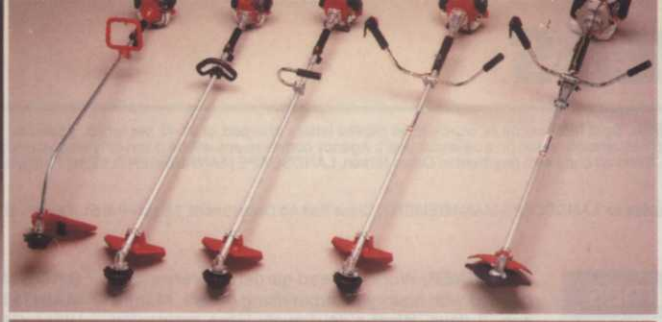

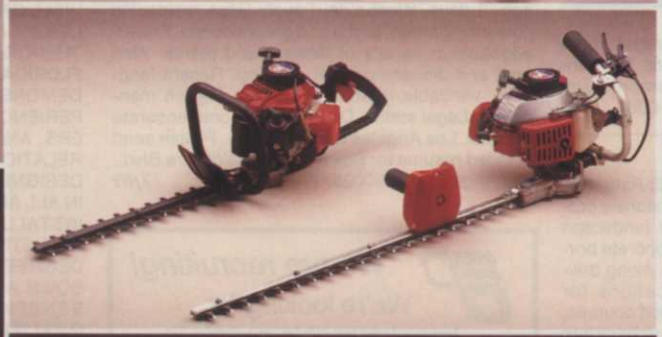

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Redmond, WA 98073-2167
(206) 885-0811
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The National Arbor Day Foundation Urges You to Plant Trees to Fight the Greenhouse Effect

The Earth is heating up.

"The Greenhouse Effect," says James E. Hansen, Director of NASA's Institute for Space Studies, "is here...it's time to stop waffling."

A sharp increase in atmospheric carbon dioxide (CO_2) is a major cause. Two things contribute — the burning of fossil fuels and the destruction of forests.

You can make a difference. Trees you plant may be our best line of defense. Trees can shade your home in summer, and slow winter wind. While your trees absorb CO_2, they also reduce the amount of fossil fuel burned for cooling and heating.

As a result, your trees can be as effective as 15 forest trees in fighting the Greenhouse Effect.

Free Booklet. The National Arbor Day Foundation has published a guidebook titled *Conservation Trees* which will show you how to plant and prune shade trees and windbreaks.

I'm pleased to offer it to you free of charge. Just return the coupon below and I'll send your *Conservation Trees* booklet by return mail.

If you believe, as I do, that fighting the Greenhouse Effect is vitally important to our future, send for your free *Conservation Trees* booklet today.

John Rosenow

John Rosenow, Executive Director
National Arbor Day Foundation

Yes, I want to help fight the Greenhouse Effect. Send my free *Conservation Trees* booklet.

Name

Address

City State, Zip

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AQUAGRO® TURNS PROBLEMS INTO PROFITS.

Lawncare and landscape professionals all over the country are using AQUAGRO® soil wetting agents on their problem lawns. They're applying it on a regular basis to move water deep into hydrophobic and compacted soils, slopes and through thatch. And as a bonus they're seeing a dramatic improvement in overall turf quality, with reduced irrigation.

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Here's what three AQUAGRO users have to say.

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Complete Lawn Service
Wilmington, Delaware

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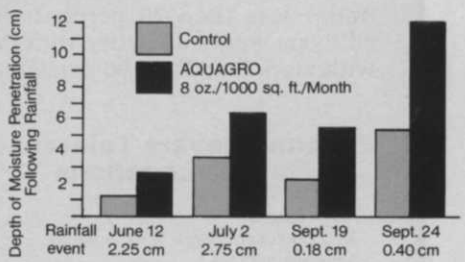
Joseph Broyles
Lawn Doctor of Oyster Bay-Syosset
East Norwich, New York

"The soils I deal with are heavy loam often with a compacted layer below the surface. AQUAGRO alleviates compaction by getting water to penetrate this layer. Eliminating standing water helps cure a major cause of fungus diseases...I've been offering AQUAGRO Liquid as an optional service for four years; recommending two, sometimes three applications a year. It's been a solution to a lot of problems, and in some cases helped set me apart from my competition."

Max Todd
Fairway Lawn Service, Inc.
Sunnyvale, California

"I am using AQUAGRO Spreadable on about 80 percent of my jobs. Drought conditions have made my customers more interested in products that can both reduce water use and keep their lawns alive. It's clear to me that the wetting agent increases the efficacy of fungicides, soil insecticides and fertilizers....I am able to sell the application as a companion to aerating and my customers recognize that the cost is offset by reduced water use and not having to pay for replanting."

Getting More Water to the Root of the Problem.



AQUAGRO moves even the briefest rainfall or irrigation deeper into the soil profile so less is lost to evaporation and run-off. Deeper water penetration also stimulates deep root growth for greater drought resistance.

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PROBLEM MANAGEMENT

by **Balakrishna Rao,** Ph.D.

When wildflowers won't do

Problem: *What is an attractive cover for an area that gets highly filtered sun under a forest canopy. Wildflowers won't work. What about grasses or ferns? (Montana)*

Solution: From your question, it appears that the forest area is heavily shaded. Reports indicate that under heavy shade (less than 25 percent of the daily available sunlight) it is difficult to establish and maintain turfgrass. Therefore, a shade tolerant groundcover is needed.

There are a number of turfgrass cultivars that adapt well to shade conditions. The important thing is to determine the amount and duration of light filtering through.

In the North, several Kentucky bluegrass cultivars, including Bristol, Glade, Nugget, Touchdown and Birka, have shown good establishment under less than 70 percent shade. Still, these cultivars would do better with more light. In areas with more than 70 to 80 percent shade, tall fescues and fine fescues have shown good establishment.

If the shade is above 85 percent, it would be difficult to grow turfgrass. Consider using some improved turf-type tall fescues such as Rebel II, Falcon, Mustang, Arid, Jaguar, Cimarron or Bonanza.

Some of the fine fescue varieties with good shade and root competition, drought tolerance and winter hardiness include: sheeps fescue (Bighorn), hard fescue (Biljart and Reliant), chewings fescue (Jamestown and Banner) and creeping fescue (Fortress, Ruby and Ensylva).

These are only some of the cultivars to choose from. I suggest you consult your local county extension office for its list of turfgrass cultivars available for shaded areas. You might also consider some of the following ground covers in addition to turfgrass as a groundcover:

Ground Covers Tolerant of Shady Locations

Ajuga species	Bugleweed
Aegopodium podagraria variegatum	Groutweed
Asperula odorata	Sweet Woodruff
Convallaria majalis	Lily-of-the-Valley
Epimedium species	Epimedium
Euonymus species	Wintercreeper
Gaultheria procumbens	Wintergreen
Hedera helix	English Ivy
Hosta species	Plantain Lily
Hypericum calycinum	Aaronsbeard St. Johnswort
Liriope spicata	Lily Turf
Lonicera species	Honeysuckle
Mahonia repens	Dwarf Holly Grape
Mitchella repens	Partridgeberry
Pachistima canbyi	Canby Pachistima
Pachysandra terminalis	Japanese Pachysandra
Teucrium chamaedrys	Germander
Thymus serphyllum	Creeping Thyme
Vinca minor	Myrtle
Xanthorhiza simplicissima	Yellowroot

Check with your local cooperative extension service and/or nurseries for plants suitable to grow in your area.

Herbicide damage to spruce

Problem: *Recently your article on herbicides and ornamentals was brought to my attention. What made it particularly interesting was my own experience with Rockland Triple D and Colorado blue spruce.*

I am rather conservative when using herbicides, and in this case applied it at about two-thirds the recommended rate to a lawn bordered by 20 evergreen and deciduous shrub and tree species. Nineteen showed no damage, and the lawn lost its weeds. But the Colorado spruce lost many of its first and second year needles. Our extension office examined a specimen and implicated the herbicide. Do you have any details for this species under test? (New York)

Solution: My experience stems from treatments that were applied during the entire growing season starting in early spring and three more times at six-week intervals. Therefore, the treatments were exposed to dry and/or wet conditions during the season.

The treatments were made using Davey's sprayer unit and application technique, which provides minimum drift, and were applied about one foot from the ground and four to six inches from the dripline of the spruce plant.

The delivery system has good control over placement and the spray mix can be easily diverted away from the non-target plants by simply twisting the spray wand. This system allows the applicator to apply close to non-target plants like spruce. The plants were seven to eight years old with good root growth.

Your problem may be caused by moisture stress, application method and/or chemical composition of the materials used—ester formulations are more volatile than amine formulations. We have used amine formulations of herbicide which are comparatively safer.

Since you have experienced injury even at two-thirds the recommended rate, I suggest you evaluate the weather data around your application period and application method as well as the chemical composition of the product.

Wolmanized lumber no problem

Problem: *Is it safe to use pressure-treated wolmanized lumber in the garden? (Illinois)*

Solution: I have not found any literature that specifically addresses your question, but from my observations I do not believe wolmanized lumber is a problem.

Wolmanized lumber is currently being used in many landscape designs. I have observed plants adjacent to the lumber in nursery and landscape settings doing well. Several of these areas were well irrigated and, if leaching of chemicals was a problem, it should have occured. I have not seen any evidence to show that.

You may want to grow plants surrounded by wolmanized wood in a smaller area to first see if you get any injury.

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